



SEQUENCE LISTING

RECEIVED
OCT 28 2003
TECH CENTER 1600/2900

<110> Reed, John C.

<120> Novel Card Proteins Involved in Cell Death Regulation

<130> P-LJ 3650

<140> 09/388,221

<141> 1999-09-01

<160> 30

<170> PatentIn Ver. 2.0

<210> 1

<211> 4422

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(4422)

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Met Ala Gly Gly Ala Trp Gly Arg Leu Ala Cys Tyr Leu Glu Phe Leu

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aag aag gag gag ctg aag gag ttc cag ctt ctg ctc gcc aat aaa gcg 96

Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala

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cac tcc agg agc tct tcg ggt gag aca ccc gct cag cca gag aag acg 144

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr

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agt ggc atg gag gtg gcc tcg tac ctg gtg gct cag tat ggg gag cag 192

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln

50	55	60	
cgg gcc tgg gac cta gcc ctc cat acc tgg gag cag atg ggg ctg agg			240
Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg			
65	70	75	80
tca ctg tgc gcc caa gcc cag gaa ggg gca ggc cac tct ccc tca ttc			288
Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe			
	85	90	95
ccc tac agc cca agt gaa ccc cac ctg ggg tct ccc agc caa ccc acc			336
Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr			
	100	105	110
tcc acc gca gtg cta atg ccc tgg atc cat gaa ttg ccg gcg ggg tgc			384
Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys			
	115	120	125
acc cag ggc tca gag aga agg gtt ttg aga cag ctg cct gac aca tct			432
Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser			
	130	135	140
gga cgc cgc tgg aga gaa atc tct gcc tca ctc ctc tac caa gct ctt			480
Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu			
145	150	155	160
cca agc tcc cca gac cat gag tct cca agc cag gag tca ccc aac gcc			528
Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala			
	165	170	175

ccc aca tcc aca gca gtg ctg ggg agc tgg gga tcc cca cct cag ccc 576

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro

180

185

190

agc cta gca ccc aga gag cag gag gct cct ggg acc caa tgg cct ctg 624

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu

195

200

205

gat gaa acg tca gga att tac tac aca gaa atc aga gaa aga gag aga 672

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg

210

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gag aaa tca gag aaa ggc agg ccc cca tgg gca gcg gtg gta gga acg 720

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr

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240

ccc cca cag gcg cac acc agc cta cag ccc cac cac cac cca tgg gag 768

Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu

245

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cct tct gtg aga gag agc ctc tgt tcc aca tgg ccc tgg aaa aat gag 816

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu

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gat ttt aac caa aaa ttc aca cag ctg cta ctt cta caa aga cct cac 864

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His

275

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ccc aga agc caa gat ccc ctg gtc aag aga agc tgg cct gat tat gtg	912
Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val	
290 295 300	
gag gag aat cga gga cat tta att gag atc aga gac tta ttt ggc cca	960
Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro	
305 310 315 320	
ggc ctg gat acc caa gaa cct cgc ata gtc ata ctg cag ggg gct gct	1008
Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala	
325 330 335	
gga att ggg aag tca aca ctg gcc agg cag gtg aag gaa gcc tgg ggg	1056
Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly	
340 345 350	
aga ggc cag ctg tat ggg gac cgc ttc cag cat gtc ttc tac ttc agc	1104
Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser	
355 360 365	
tgc aga gag ctg gcc cag tcc aag gtg gtg agt ctc gct gag ctc atc	1152
Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile	
370 375 380	
gga aaa gat ggg aca gcc act ccg gct ccc att aga cag atc ctg tct	1200
Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser	
385 390 395 400	

agg cca gag cgg ctg ctc ttc atc ctc gat ggt gta gat gag cca gga 1248

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly

405

410

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tgg gtc ttg cag gag ccg agt tct gag ctc tgt ctg cac tgg agc cag 1296

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln

420

425

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cca cag ccg gcg gat gca ctg ctg ggc agt ttg ctg ggg aaa act ata 1344

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile

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ctt ccc gag gca tcc ttc ctg atc acg gct cgg acc aca gct ctg cag 1392

Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln

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455

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aac ctc att cct tct ttg gag cag gca cgt tgg gta gag gtc ctg ggg 1440

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly

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ttc tct gag tcc agc agg aag gaa tat ttc tac aga tat ttc aca gat 1488

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp

485

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gaa agg caa gca att aga gcc ttt agg ttg gtc aaa tca aac aaa gag 1536

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu

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ctc tgg gcc ctg tgt ctt gtg ccc tgg gtg tcc tgg ctg gcc tgc act 1584
 Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr
 515 520 525

tgc ctg atg cag cag atg aag cgg aag gaa aaa ctc aca ctg act tcc 1632
 Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser
 530 535 540

aag acc acc aca acc ctc tgt cta cat tac ctt gcc cag gct ctc caa 1680
 Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln
 545 550 555 560

gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct 1728
 Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala
 565 570 575

gag ggc atc tgg caa aaa aag acc ctt ttc agt cca gat gac ctc agg 1776
 Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg
 580 585 590

aag cat ggg tta gat ggg gcc atc atc tcc acc ttc ttg aag atg ggt 1824
 Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly
 595 600 605

att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc 1872
 Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu
 610 615 620

tgt ttc caa gag ttc ttt gca gca atg tcc tat gtc ttg gag gat gag 1920

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu
625 630 635 640

aag ggg aga ggt aaa cat tct aat tgc atc ata gat ttg gaa aag acg 1968
Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr
645 650 655

cta gaa gca tat gga ata cat ggc ctg ttt ggg gca tca acc aca cgt 2016
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg
660 665 670

ttc cta ttg ggc ctg tta agt gat gag ggg gag aga gag atg gag aac 2064
Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn
675 680 685

atc ttt cac tgc cgg ctg tct cag ggg agg aac ctg atg cag tgg gtc 2112
Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val
690 695 700

ccg tcc ctg cag ctg ctg ctg cag cca cac tct ctg gag tcc ctc cac 2160
Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His
705 710 715 720

tgc ttg tac gag act cgg aac aaa acg ttc ctg aca caa gtg atg gcc 2208
Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala
725 730 735

cat ttc gaa gaa atg ggc atg tgt gta gaa aca gac atg gag ctc tta 2256

His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu
740 745 750

gtg tgc act ttc tgc att aaa ttc agc cgc cac gtg aag aag ctt cag 2304
Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln
755 760 765

ctg att gag ggc agg cag cac aga tca aca tgg agc ccc acc atg gta 2352
Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val
770 775 780

gtc ctg ttc agg tgg gtc cca gtc aca gat gcc tat tgg cag att ctc 2400
Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu
785 790 795 800

ttc tcc gtc ctc aag gtc acc aga aac ctg aag gag ctg gac cta agt 2448
Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser
805 810 815

gga aac tcg ctg agc cac tct gca gtg aag agt ctt tgt aag acc ctg 2496
Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu
820 825 830

aga cgc cct cgc tgc ctc ctg gag acc ctg cgg ttg gct ggc tgt ggc 2544
Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly
835 840 845

ctc aca gct gag gac tgc aag gac ctt gcc ttt ggg ctg aga gcc aac 2592
Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn

850	855	860	
cag acc ctg acc gag ctg gac ctg agc ttc aat gtg ctc acg gat gct	2640		
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala			
865	870	875	880
gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta	2688		
Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu			
	885	890	895
cag cga ctg cag ctg gtc agc tgt ggc ctc acg tct gac tgc tgc cag	2736		
Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln			
	900	905	910
gac ctg gcc tct gtg ctt agt gcc agc ccc agc ctg aag gag cta gac	2784		
Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp			
	915	920	925
ctg cag cag aac aac ctg gat gac gtt ggc gtg cga ctg ctc tgt gag	2832		
Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu			
	930	935	940
ggg ctc agg cat cct gcc tgc aaa ctc ata cgc ctg ggg ctg gac cag	2880		
Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln			
945	950	955	960
aca act ctg agt gat gag atg agg cag gaa ctg agg gcc ctg gag cag	2928		
Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln			

965	970	975	
gag aaa cct cag ctg ctc atc ttc agc aga cgg aaa cca agt gtg atg			2976
Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met			
980	985	990	
acc cct act gag ggc ctg gat acg gga gag atg agt aat agc aca tcc			3024
Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser Thr Ser			
995	1000	1005	
tca ctc aag cgg cag aga ctc gga tca gag agg gcg gct tcc cat gtt			3072
Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser His Val			
1010	1015	1020	
gct cag gct aat ctc aaa ctc ctg gac gtg agc aag atc ttc cca att			3120
Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe Pro Ile			
1025	1030	1035	1040
gct gag att gca gag gaa agc tcc cca gag gta gta ccg gtg gaa ctc			3168
Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val Glu Leu			
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ttg tgc gtg cct tct cct gcc tct caa ggg gac ctg cat acg aag cct			3216
Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr Lys Pro			
1060	1065	1070	
ttg ggg act gac gat gac ttc tgg ggc ccc acg ggg cct gtg gct act			3264
Leu Gly Thr Asp Asp Asp Phe Trp Gly Pro Thr Gly Pro Val Ala Thr			
1075	1080	1085	

gag gta gtt gac aaa gaa aag aac ttg tac cga gtt cac ttc cct gta 3312

Glu Val Val Asp Lys Glu Lys Asn Leu Tyr Arg Val His Phe Pro Val

1090

1095

1100

gct ggc tcc tac cgc tgg ccc aac acg ggt ctc tgc ttt gtg atg aga 3360

Ala Gly Ser Tyr Arg Trp Pro Asn Thr Gly Leu Cys Phe Val Met Arg

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1110

1115

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gaa gcg gtg acc gtt gag att gaa ttc tgt gtg tgg gac cag ttc ctg 3408

Glu Ala Val Thr Val Glu Ile Glu Phe Cys Val Trp Asp Gln Phe Leu

1125

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1135

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Gly Glu Ile Asn Pro Gln His Ser Trp Met Val Ala Gly Pro Leu Leu

1140

1145

1150

gac atc aag gct gag cct gga gct gtg gaa gct gtg cac ctc cct cac 3504

Asp Ile Lys Ala Glu Pro Gly Ala Val Glu Ala Val His Leu Pro His

1155

1160

1165

ttt gtg gct ctc caa ggg ggc cat gtg gac aca tcc ctg ttc caa atg 3552

Phe Val Ala Leu Gln Gly Gly His Val Asp Thr Ser Leu Phe Gln Met

1170

1175

1180

gcc cac ttt aaa gag gag ggg atg ctc ctg gag aag cca gcc agg gtg 3600

Ala His Phe Lys Glu Glu Gly Met Leu Leu Glu Lys Pro Ala Arg Val

1185

1190

1195

1200

gag ctg cat cac ata gtt ctg gaa aac ccc agc ttc tcc ccc ttg gga 3648
 Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro Leu Gly

1205 1210 1215

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 Val Leu Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro Val Thr

1220 1225 1230

tct gtg gtg ttg ctt tac cac cgc gtc cat cct gag gaa gtc acc ttc 3744
 Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val Thr Phe

1235 1240 1245

cac ctc tac ctg atc cca agt gac tgc tcc att cgg aag gcc ata gat 3792
 His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Ala Ile Asp

1250 1255 1260

gat cta gaa atg aaa ttc cag ttt gtg cga atc cac aag cca ccc ccg 3840
 Asp Leu Glu Met Lys Phe Gln Phe Val Arg Ile His Lys Pro Pro Pro

1265 1270 1275 1280

ctg acc cca ctt tat atg ggc tgt cgt tac act gtg tct ggg tct ggt 3888
 Leu Thr Pro Leu Tyr Met Gly Cys Arg Tyr Thr Val Ser Gly Ser Gly

1285 1290 1295

tca ggg atg ctg gaa ata ctc ccc aag gaa ctg gag ctc tgc tat cga 3936
 Ser Gly Met Leu Glu Ile Leu Pro Lys Glu Leu Glu Leu Cys Tyr Arg

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 Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu Phe Tyr Val Gly His Leu
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gga tca ggg atc agg ctg caa gtg aaa gac aag aaa gat gag act ctg 4032
 Gly Ser Gly Ile Arg Leu Gln Val Lys Asp Lys Lys Asp Glu Thr Leu
 1330 1335 1340

gtg tgg gag gcc ttg gtg aaa cca gga gat ctc atg cct gca act act 4080
 Val Trp Glu Ala Leu Val Lys Pro Gly Asp Leu Met Pro Ala Thr Thr
 1345 1350 1355 1360

ctg atc cct cca gcc cgc ata gcc gta cct tca cct ctg gat gcc ccg 4128
 Leu Ile Pro Pro Ala Arg Ile Ala Val Pro Ser Pro Leu Asp Ala Pro
 1365 1370 1375

cag ttg ctg cac ttt gtg gac cag tat cga gag cag ctg ata gcc cga 4176
 Gln Leu Leu His Phe Val Asp Gln Tyr Arg Glu Gln Leu Ile Ala Arg
 1380 1385 1390

gtg aca tcg gtg gag gtt gtc ttg gac aaa ctg cat gga cag gtg ctg 4224
 Val Thr Ser Val Glu Val Val Leu Asp Lys Leu His Gly Gln Val Leu
 1395 1400 1405

agc cag gag cag tac gag agg gtg ctg gct gag aac acg agg ccc agc 4272
 Ser Gln Glu Gln Tyr Glu Arg Val Leu Ala Glu Asn Thr Arg Pro Ser
 1410 1415 1420

cag atg cgg aag ctg ttc agc ttg agc cag tcc tgg gac cgg aag tgc 4320
 Gln Met Arg Lys Leu Phe Ser Leu Ser Gln Ser Trp Asp Arg Lys Cys
 1425 1430 1435 1440

aaa gat gga ctc tac caa gcc ctg aag gag acc cat cct cac ctc att 4368
 Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu Thr His Pro His Leu Ile
 1445 1450 1455

atg gaa ctc tgg gag aag ggc agc aaa aag gga ctc ctg cca ctc agc 4416
 Met Glu Leu Trp Glu Lys Gly Ser Lys Lys Gly Leu Leu Pro Leu Ser
 1460 1465 1470

agc tga 4422
 Ser

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 His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr

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Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln		
50	55	60
Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg		
65	70	75 80
Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe		
85	90	95
Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr		
100	105	110
Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys		
115	120	125
Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser		
130	135	140
Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu		
145	150	155 160
Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala		
165	170	175
Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro		
180	185	190

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu

195

200

205

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg

210

215

220

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr

225

230

235

240

Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu

245

250

255

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu

260

265

270

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His

275

280

285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val

290

295

300

Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro

305

310

315

320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala

325

330

335

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly

340	345	350	
Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser			
355	360	365	
Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile			
370	375	380	
Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser			
385	390	395	400
Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly			
405	410	415	
Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln			
420	425	430	
Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile			
435	440	445	
Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln			
450	455	460	
Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly			
465	470	475	480
Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp			
485	490	495	

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu

500

505

510

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr

515

520

525

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser

530

535

540

Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln

545

550

555

560

Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala

565

570

575

Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg

580

585

590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly

595

600

605

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu

610

615

620

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu

625

630

635

640

Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr

645	650	655
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg		
660	665	670
Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn		
675	680	685
Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val		
690	695	700
Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His		
705	710	715
Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala		
725	730	735
His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu		
740	745	750
Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln		
755	760	765
Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val		
770	775	780
Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu		
785	790	795
		800

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser

805

810

815

Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu

820

825

830

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly

835

840

845

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn

850

855

860

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala

865

870

875

880

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu

885

890

895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln

900

905

910

Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp

915

920

925

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu

930

935

940

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln

945 950 955 960

Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln

965 970 975

Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met

980 985 990

Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser Thr Ser

995 1000 1005

Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser His Val

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Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe Pro Ile

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Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr Lys Pro

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Gly Glu Ile Asn Pro Gln His Ser Trp Met Val Ala Gly Pro Leu Leu
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Asp Ile Lys Ala Glu Pro Gly Ala Val Glu Ala Val His Leu Pro His
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Phe Val Ala Leu Gln Gly Gly His Val Asp Thr Ser Leu Phe Gln Met
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Ala His Phe Lys Glu Glu Gly Met Leu Leu Glu Lys Pro Ala Arg Val
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Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro Leu Gly
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Val Leu Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro Val Thr
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Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val Thr Phe
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His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Ala Ile Asp

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Leu Thr Pro Leu Tyr Met Gly Cys Arg Tyr Thr Val Ser Gly Ser Gly			
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Ser Gly Met Leu Glu Ile Leu Pro Lys Glu Leu Glu Leu Cys Tyr Arg			
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Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu Phe Tyr Val Gly His Leu			
	1315	1320	1325
Gly Ser Gly Ile Arg Leu Gln Val Lys Asp Lys Lys Asp Glu Thr Leu			
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Val Trp Glu Ala Leu Val Lys Pro Gly Asp Leu Met Pro Ala Thr Thr			
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Leu Ile Pro Pro Ala Arg Ile Ala Val Pro Ser Pro Leu Asp Ala Pro			
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Gln Leu Leu His Phe Val Asp Gln Tyr Arg Glu Gln Leu Ile Ala Arg			
	1380	1385	1390
Val Thr Ser Val Glu Val Val Leu Asp Lys Leu His Gly Gln Val Leu			
	1395	1400	1405

Ser Gln Glu Gln Tyr Glu Arg Val Leu Ala Glu Asn Thr Arg Pro Ser

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1415

1420

Gln Met Arg Lys Leu Phe Ser Leu Ser Gln Ser Trp Asp Arg Lys Cys

1425

1430

1435

1440

Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu Thr His Pro His Leu Ile

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Ser

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Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala	
20 25 30	
cac tcc agg agc tct tcg ggt gag aca ccc gct cag cca gag aag acg	144
His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr	
35 40 45	
agt ggc atg gag gtg gcc tcg tac ctg gtg gct cag tat ggg gag cag	192
Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln	
50 55 60	
cgg gcc tgg gac cta gcc ctc cat acc tgg gag cag atg ggg ctg agg	240
Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg	
65 70 75 80	
tca ctg tgc gcc caa gcc cag gaa ggg gca ggc cac tct ccc tca ttc	288
Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe	
85 90 95	
ccc tac agc cca agt gaa ccc cac ctg ggg tct ccc agc caa ccc acc	336
Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr	
100 105 110	
tcc acc gca gtg cta atg ccc tgg atc cat gaa ttg ccg gcg ggg tgc	384
Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys	
115 120 125	

acc cag ggc tca gag aga agg gtt ttg aga cag ctg cct gac aca tct 432

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser

130

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Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu

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cca agc tcc cca gac cat gag tct cca agc cag gag tca ccc aac gcc 528

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala

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ccc aca tcc aca gca gtg ctg ggg agc tgg gga tcc cca cct cag ccc 576

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro

180

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190

agc cta gca ccc aga gag cag gag gct cct ggg acc caa tgg cct ctg 624

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu

195

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205

gat gaa acg tca gga att tac tac aca gaa atc aga gaa aga gag aga 672

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg

210

215

220

gag aaa tca gag aaa ggc agg ccc cca tgg gca gcg gtg gta gga acg 720

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr

225

230

235

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ccc cca cag gcg cac acc agc cta cag ccc cac cac cac cca tgg gag	768
Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu	
245 250 255	
cct tct gtg aga gag agc ctc tgt tcc aca tgg ccc tgg aaa aat gag	816
Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu	
260 265 270	
gat ttt aac caa aaa ttc aca cag ctg cta ctt cta caa aga cct cac	864
Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His	
275 280 285	
ccc aga agc caa gat ccc ctg gtc aag aga agc tgg cct gat tat gtg	912
Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val	
290 295 300	
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Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro	
305 310 315 320	
ggc ctg gat acc caa gaa cct cgc ata gtc ata ctg cag ggg gct gct	1008
Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala	
325 330 335	
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Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly	
340 345 350	

aga ggc cag ctg tat ggg gac cgc ttc cag cat gtc ttc tac ttc agc	1104
Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser	
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tgc aga gag ctg gcc cag tcc aag gtg gtg agt ctc gct gag ctc atc	1152
Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile	
370 375 380	
gga aaa gat ggg aca gcc act ccg gct ccc att aga cag atc ctg tct	1200
Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser	
385 390 395 400	
agg cca gag cgg ctg ctc ttc atc ctc gat ggt gta gat gag cca gga	1248
Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly	
405 410 415	
tgg gtc ttg cag gag ccg agt tct gag ctc tgt ctg cac tgg agc cag	1296
Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln	
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cca cag ccg gcg gat gca ctg ctg ggc agt ttg ctg ggg aaa act ata	1344
Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile	
435 440 445	
ctt ccc gag gca tcc ttc ctg atc acg gct cgg acc aca gct ctg cag	1392
Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln	
450 455 460	
aac ctc att cct tct ttg gag cag gca cgt tgg gta gag gtc ctg ggg	1440

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly

465 470 475 480

ttc tct gag tcc agc agg aag gaa tat ttc tac aga tat ttc aca gat 1488

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp

485 490 495

gaa agg caa gca att aga gcc ttt agg ttg gtc aaa tca aac aaa gag 1536

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu

500 505 510

ctc tgg gcc ctg tgt ctt gtg ccc tgg gtg tcc tgg ctg gcc tgc act 1584

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr

515 520 525

tgc ctg atg cag cag atg aag cgg aag gaa aaa ctc aca ctg act tcc 1632

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser

530 535 540

aag acc acc aca acc ctc tgt cta cat tac ctt gcc cag gct ctc caa 1680

Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln

545 550 555 560

gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct 1728

Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala

565 570 575

gag ggc atc tgg caa aaa aag acc ctt ttc agt cca gat gac ctc agg 1776

Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg

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585

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aag cat ggg tta gat ggg gcc atc atc tcc acc ttc ttg aag atg ggt 1824

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly

595

600

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att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc 1872

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu

610

615

620

tgt ttc caa gag ttc ttt gca gca atg tcc tat gtc ttg gag gat gag 1920

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu

625

630

635

640

aag ggg aga ggt aaa cat tct aat tgc atc ata gat ttg gaa aag acg 1968

Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr

645

650

655

cta gaa gca tat gga ata cat ggc ctg ttt ggg gca tca acc aca cgt 2016

Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg

660

665

670

ttc cta ttg ggc ctg tta agt gat gag ggg gag aga gag atg gag aac 2064

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn

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680

685

atc ttt cac tgc cgg ctg tct cag ggg agg aac ctg atg cag tgg gtc 2112

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val

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Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His			
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tgc ttg tac gag act cgg aac aaa acg ttc ctg aca caa gtg atg gcc	2208		
Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala			
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cat ttc gaa gaa atg ggc atg tgt gta gaa aca gac atg gag ctc tta	2256		
His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu			
740	745	750	
gtg tgc act ttc tgc att aaa ttc agc cgc cac gtg aag aag ctt cag	2304		
Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln			
755	760	765	
ctg att gag ggc agg cag cac aga tca aca tgg agc ccc acc atg gta	2352		
Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val			
770	775	780	
gtc ctg ttc agg tgg gtc cca gtc aca gat gcc tat tgg cag att ctc	2400		
Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu			
785	790	795	800
ttc tcc gtc ctc aag gtc acc aga aac ctg aag gag ctg gac cta agt	2448		
Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser			

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Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu			
820	825	830	
aga cgc cct cgc tgc ctc ctg gag acc ctg cgg ttg gct ggc tgt ggc			2544
Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly			
835	840	845	
ctc aca gct gag gac tgc aag gac ctt gcc ttt ggg ctg aga gcc aac			2592
Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn			
850	855	860	
cag acc ctg acc gag ctg gac ctg agc ttc aat gtg ctc acg gat gct			2640
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala			
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gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta			2688
Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu			
885	890	895	
cag cga ctg cag ctg gtc agc tgt ggc ctc acg tct gac tgc tgc cag			2736
Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln			
900	905	910	
gac ctg gcc tct gtg ctt agt gcc agc ccc agc ctg aag gag cta gac			2784
Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp			
915	920	925	

ctg cag cag aac aac ctg gat gac gtt ggc gtg cga ctg ctc tgt gag 2832

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu

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ggg ctc agg cat cct gcc tgc aaa ctc ata cgc ctg ggg aaa cca agt 2880

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser

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gtg atg acc cct act gag ggc ctg gat acg gga gag atg agt aat agc 2928

Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser

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aca tcc tca ctc aag cgg cag aga ctc gga tca gag agg gcg gct tcc 2976

Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser

980

985

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cat gtt gct cag gct aat ctc aaa ctc ctg gac gtg agc aag atc ttc 3024

His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe

995

1000

1005

cca att gct gag att gca gag gaa agc tcc cca gag gta gta ccg gtg 3072

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Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr

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aag cct ttg ggg act gac gat gac ttc tgg ggc ccc acg ggg cct gtg 3168
 Lys Pro Leu Gly Thr Asp Asp Asp Phe Trp Gly Pro Thr Gly Pro Val

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 Ala Thr Glu Val Val Asp Lys Glu Lys Asn Leu Tyr Arg Val His Phe

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cct gta gct ggc tcc tac cgc tgg ccc aac acg ggt ctc tgc ttt gtg 3264
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 Pro His Phe Val Ala Leu Gln Gly Gly His Val Asp Thr Ser Leu Phe

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ctc atg cct gca act act ctg atc cct cca gcc cgc ata gcc gta cct	3888
Leu Met Pro Ala Thr Thr Leu Ile Pro Pro Ala Arg Ile Ala Val Pro	
1285 1290 1295	
tca cct ctg gat gcc ccg cag ttg ctg cac ttt gtg gac cag tat cga	3936
Ser Pro Leu Asp Ala Pro Gln Leu Leu His Phe Val Asp Gln Tyr Arg	
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Glu Gln Leu Ile Ala Arg Val Thr Ser Val Glu Val Val Leu Asp Lys	
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Glu Asn Thr Arg Pro Ser Gln Met Arg Lys Leu Phe Ser Leu Ser Gln	
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Ser Trp Asp Arg Lys Cys Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu	
1365 1370 1375	
acc cat cct cac ctc att atg gaa ctc tgg gag aag ggc agc aaa aag	4176

Thr His Pro His Leu Ile Met Glu Leu Trp Glu Lys Gly Ser Lys Lys

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4200

Gly Leu Leu Pro Leu Ser Ser

1395

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20

25

30

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr

35

40

45

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln

50

55

60

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg

65

70

75

80

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe

85

90

95

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr

100

105

110

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys

115

120

125

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser

130

135

140

Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu

145

150

155

160

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala

165

170

175

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro

180

185

190

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu

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200

205

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg

210

215

220

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr

225 230 235 240

Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu

245 250 255

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu

260 265 270

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His

275 280 285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val

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Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro

305 310 315 320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala

325 330 335

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly

340 345 350

Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser

355 360 365

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile

370 375 380

Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser
 385 390 395 400

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly
 405 410 415

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln
 420 425 430

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile
 435 440 445

Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln
 450 455 460

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly
 465 470 475 480

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp
 485 490 495

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu
 500 505 510

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr
 515 520 525

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser

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Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln			
545	550	555	560
Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala			
	565	570	575
Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg			
	580	585	590
Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly			
	595	600	605
Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu			
	610	615	620
Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu			
625	630	635	640
Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr			
	645	650	655
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg			
	660	665	670
Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn			
	675	680	685

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val

690

695

700

Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His

705

710

715

720

Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala

725

730

735

His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu

740

745

750

Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln

755

760

765

Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val

770

775

780

Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu

785

790

795

800

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser

805

810

815

Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu

820

825

830

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly

835	840	845
Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn		
850	855	860
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala		
865	870	875
		880
Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu		
885	890	895
Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln		
900	905	910
Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp		
915	920	925
Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu		
930	935	940
Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser		
945	950	955
		960
Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser		
965	970	975
Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser		
980	985	990

His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe

995

1000

1005

Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val

1010

1015

1020

Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr

1025

1030

1035

1040

Lys Pro Leu Gly Thr Asp Asp Asp Phe Trp Gly Pro Thr Gly Pro Val

1045

1050

1055

Ala Thr Glu Val Val Asp Lys Glu Lys Asn Leu Tyr Arg Val His Phe

1060

1065

1070

Pro Val Ala Gly Ser Tyr Arg Trp Pro Asn Thr Gly Leu Cys Phe Val

1075

1080

1085

Met Arg Glu Ala Val Thr Val Glu Ile Glu Phe Cys Val Trp Asp Gln

1090

1095

1100

Phe Leu Gly Glu Ile Asn Pro Gln His Ser Trp Met Val Ala Gly Pro

1105

1110

1115

1120

Leu Leu Asp Ile Lys Ala Glu Pro Gly Ala Val Glu Ala Val His Leu

1125

1130

1135

Pro His Phe Val Ala Leu Gln Gly Gly His Val Asp Thr Ser Leu Phe

1140	1145	1150	
Gln Met Ala His Phe Lys Glu Glu Gly Met Leu Leu Glu Lys Pro Ala			
1155	1160	1165	
Arg Val Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro			
1170	1175	1180	
Leu Gly Val Leu Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro			
1185	1190	1195	1200
Val Thr Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val			
	1205	1210	1215
Thr Phe His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Glu			
1220	1225	1230	
Leu Glu Leu Cys Tyr Arg Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu			
1235	1240	1245	
Phe Tyr Val Gly His Leu Gly Ser Gly Ile Arg Leu Gln Val Lys Asp			
1250	1255	1260	
Lys Lys Asp Glu Thr Leu Val Trp Glu Ala Leu Val Lys Pro Gly Asp			
1265	1270	1275	1280
Leu Met Pro Ala Thr Thr Leu Ile Pro Pro Ala Arg Ile Ala Val Pro			
	1285	1290	1295

Ser Pro Leu Asp Ala Pro Gln Leu Leu His Phe Val Asp Gln Tyr Arg

1300

1305

1310

Glu Gln Leu Ile Ala Arg Val Thr Ser Val Glu Val Val Leu Asp Lys

1315

1320

1325

Leu His Gly Gln Val Leu Ser Gln Glu Gln Tyr Glu Arg Val Leu Ala

1330

1335

1340

Glu Asn Thr Arg Pro Ser Gln Met Arg Lys Leu Phe Ser Leu Ser Gln

1345

1350

1355

1360

Ser Trp Asp Arg Lys Cys Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu

1365

1370

1375

Thr His Pro His Leu Ile Met Glu Leu Trp Glu Lys Gly Ser Lys Lys

1380

1385

1390

Gly Leu Leu Pro Leu Ser Ser

1395

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1 5 10 15

aag aag gag gag ctg aag gag ttc cag ctt ctg ctc gcc aat aaa gcg 96

Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala

20 25 30

cac tcc agg agc tct tcg ggt gag aca ccc gct cag cca gag aag acg 144

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr

35 40 45

agt ggc atg gag gtg gcc tcg tac ctg gtg gct cag tat ggg gag cag 192

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln

50 55 60

cgg gcc tgg gac cta gcc ctc cat acc tgg gag cag atg ggg ctg agg 240

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg

65 70 75 80

tca ctg tgc gcc caa gcc cag gaa ggg gca ggc cac tct ccc tca ttc 288

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe

85 90 95

ccc tac agc cca agt gaa ccc cac ctg ggg tct ccc agc caa ccc acc	336
Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr	
100 105 110	
tcc acc gca gtg cta atg ccc tgg atc cat gaa ttg ccg gcg ggg tgc	384
Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys	
115 120 125	
acc cag ggc tca gag aga agg gtt ttg aga cag ctg cct gac aca tct	432
Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser	
130 135 140	
gga cgc cgc tgg aga gaa atc tct gcc tca ctc ctc tac caa gct ctt	480
Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu	
145 150 155 160	
cca agc tcc cca gac cat gag tct cca agc cag gag tca ccc aac gcc	528
Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala	
165 170 175	
ccc aca tcc aca gca gtg ctg ggg agc tgg gga tcc cca cct cag ccc	576
Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro	
180 185 190	
agc cta gca ccc aga gag cag gag gct cct ggg acc caa tgg cct ctg	624
Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu	
195 200 205	
gat gaa acg tca gga att tac tac aca gaa atc aga gaa aga gag aga	672

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg
 210 215 220

gag aaa tca gag aaa ggc agg ccc cca tgg gca gcg gtg gta gga acg 720
 Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr
 225 230 235 240

ccc cca cag gcg cac acc agc cta cag ccc cac cac cac cca tgg gag 768
 Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu
 245 250 255

cct tct gtg aga gag agc ctc tgt tcc aca tgg ccc tgg aaa aat gag 816
 Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu
 260 265 270

gat ttt aac caa aaa ttc aca cag ctg cta ctt cta caa aga cct cac 864
 Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His
 275 280 285

ccc aga agc caa gat ccc ctg gtc aag aga agc tgg cct gat tat gtg 912
 Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val
 290 295 300

gag gag aat cga gga cat tta att gag atc aga gac tta ttt ggc cca 960
 Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro
 305 310 315 320

ggc ctg gat acc caa gaa cct cgc ata gtc ata ctg cag ggg gct gct 1008

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala

325

330

335

gga att ggg aag tca aca ctg gcc agg cag gtg aag gaa gcc tgg ggg 1056

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly

340

345

350

aga ggc cag ctg tat ggg gac cgc ttc cag cat gtc ttc tac ttc agc 1104

Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser

355

360

365

tgc aga gag ctg gcc cag tcc aag gtg gtg agt ctc gct gag ctc atc 1152

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile

370

375

380

gga aaa gat ggg aca gcc act ccg gct ccc att aga cag atc ctg tct 1200

Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser

385

390

395

400

agg cca gag cgg ctg ctc ttc atc ctc gat ggt gta gat gag cca gga 1248

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly

405

410

415

tgg gtc ttg cag gag ccg agt tct gag ctc tgt ctg cac tgg agc cag 1296

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln

420

425

430

cca cag ccg gcg gat gca ctg ctg ggc agt ttg ctg ggg aaa act ata 1344

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile

435	440	445	
ctt ccc gag gca tcc ttc ctg atc acg gct cgg acc aca gct ctg cag			1392
Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln			
450	455	460	
aac ctc att cct tct ttg gag cag gca cgt tgg gta gag gtc ctg ggg			1440
Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly			
465	470	475	480
ttc tct gag tcc agc agg aag gaa tat ttc tac aga tat ttc aca gat			1488
Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp			
	485	490	495
gaa agg caa gca att aga gcc ttt agg ttg gtc aaa tca aac aaa gag			1536
Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu			
	500	505	510
ctc tgg gcc ctg tgt ctt gtg ccc tgg gtg tcc tgg ctg gcc tgc act			1584
Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr			
	515	520	525
tgc ctg atg cag cag atg aag cgg aag gaa aaa ctc aca ctg act tcc			1632
Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser			
	530	535	540
aag acc acc aca acc ctc tgt cta cat tac ctt gcc cag gct ctc caa			1680
Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln			

545	550	555	560	
gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct				1728
Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala				
	565	570	575	
gag ggc atc tgg caa aaa aag acc ctt ttc agt cca gat gac ctc agg				1776
Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg				
	580	585	590	
aag cat ggg tta gat ggg gcc atc atc tcc acc ttc ttg aag atg ggt				1824
Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly				
	595	600	605	
att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc				1872
Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu				
	610	615	620	
tgt ttc caa gag ttc ttt gca gca atg tcc tat gtc ttg gag gat gag				1920
Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu				
625	630	635	640	
aag ggg aga ggt aaa cat tct aat tgc atc ata gat ttg gaa aag acg				1968
Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr				
	645	650	655	
cta gaa gca tat gga ata cat ggc ctg ttt ggg gca tca acc aca cgt				2016
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg				
	660	665	670	

ttc cta ttg ggc ctg tta agt gat gag ggg gag aga gag atg gag aac 2064

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn

675

680

685

atc ttt cac tgc cgg ctg tct cag ggg agg aac ctg atg cag tgg gtc 2112

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val

690

695

700

ccg tcc ctg cag ctg ctg ctg cag cca cac tct ctg gag tcc ctc cac 2160

Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His

705

710

715

720

tgc ttg tac gag act cgg aac aaa acg ttc ctg aca caa gtg atg gcc 2208

Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala

725

730

735

cat ttc gaa gaa atg ggc atg tgt gta gaa aca gac atg gag ctc tta 2256

His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu

740

745

750

gtg tgc act ttc tgc att aaa ttc agc cgc cac gtg aag aag ctt cag 2304

Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln

755

760

765

ctg att gag ggc agg cag cac aga tca aca tgg agc ccc acc atg gta 2352

Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val

770

775

780

gtc ctg ttc agg tgg gtc cca gtc aca gat gcc tat tgg cag att ctc 2400

Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu

785 790 795 800

ttc tcc gtc ctc aag gtc acc aga aac ctg aag gag ctg gac cta agt 2448

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser

805 810 815

gga aac tcg ctg agc cac tct gca gtg aag agt ctt tgt aag acc ctg 2496

Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu

820 825 830

aga cgc cct cgc tgc ctc ctg gag acc ctg cgg ttg gct ggc tgt ggc 2544

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly

835 840 845

ctc aca gct gag gac tgc aag gac ctt gcc ttt ggg ctg aga gcc aac 2592

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn

850 855 860

cag acc ctg acc gag ctg gac ctg agc ttc aat gtg ctc acg gat gct 2640

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala

865 870 875 880

gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta 2688

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu

885 890 895

cag cga ctg cag ctg gtc agc tgt ggc ctc acg tct gac tgc tgc cag 2736
 Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln

900 905 910

gac ctg gcc tct gtg ctt agt gcc agc ccc agc ctg aag gag cta gac 2784
 Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp

915 920 925

ctg cag cag aac aac ctg gat gac gtt ggc gtg cga ctg ctc tgt gag 2832
 Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu

930 935 940

ggg ctc agg cat cct gcc tgc aaa ctc ata cgc ctg ggg aaa cca agt 2880
 Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser

945 950 955 960

gtg atg acc cct act gag ggc ctg gat acg gga gag atg agt aat agc 2928
 Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser

965 970 975

aca tcc tca ctc aag cgg cag aga ctc gga tca gag agg gcg gct tcc 2976
 Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser

980 985 990

cat gtt gct cag gct aat ctc aaa ctc ctg gac gtg agc aag atc ttc 3024
 His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe

995 1000 1005

cca att gct gag att gca gag gaa agc tcc cca gag gta gta ccg gtg	3072
Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val	
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Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr	
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aag cct ttg ggg act gac gat gac ttc tgg ggc ccc acg ggg cct gtg	3168
Lys Pro Leu Gly Thr Asp Asp Asp Phe Trp Gly Pro Thr Gly Pro Val	
1045	1050
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gct act gag gta gtt gac aaa gaa aag aac ttg tac cga gtt cac ttc	3216
Ala Thr Glu Val Val Asp Lys Glu Lys Asn Leu Tyr Arg Val His Phe	
1060	1065
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cct gta gct ggc tcc tac cgc tgg ccc aac acg ggt ctc tgc ttt gtg	3264
Pro Val Ala Gly Ser Tyr Arg Trp Pro Asn Thr Gly Leu Cys Phe Val	
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1085	
atg aga gaa gcg gtg acc gtt gag att gaa ttc tgt gtg tgg gac cag	3312
Met Arg Glu Ala Val Thr Val Glu Ile Glu Phe Cys Val Trp Asp Gln	
1090	1095
1100	
ttc ctg ggt gag atc aac cca cag cac agc tgg atg gtg gca ggg cct	3360
Phe Leu Gly Glu Ile Asn Pro Gln His Ser Trp Met Val Ala Gly Pro	
1105	1110
1115	1120
ctg ctg gac atc aag gct gag cct gga gct gtg gaa gct gtg cac ctc	3408

Leu Leu Asp Ile Lys Ala Glu Pro Gly Ala Val Glu Ala Val His Leu	
1125	1130 1135
cct cac ttt gtg gct ctc caa ggg ggc cat gtg gac aca tcc ctg ttc	3456
Pro His Phe Val Ala Leu Gln Gly Gly His Val Asp Thr Ser Leu Phe	
1140	1145 1150
caa atg gcc cac ttt aaa gag gag ggg atg ctc ctg gag aag cca gcc	3504
Gln Met Ala His Phe Lys Glu Glu Gly Met Leu Leu Glu Lys Pro Ala	
1155	1160 1165
agg gtg gag ctg cat cac ata gtt ctg gaa aac ccc agc ttc tcc ccc	3552
Arg Val Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro	
1170	1175 1180
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Leu Gly Val Leu Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro	
1185	1190 1195 1200
gtc acc tct gtg gtg ttg ctt tac cac cgc gtc cat cct gag gaa gtc	3648
Val Thr Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val	
1205	1210 1215
acc ttc cac ctc tac ctg atc cca agt gac tgc tcc att cgg aag gcc	3696
Thr Phe His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Ala	
1220	1225 1230
ata gat gat cta gaa atg aaa ttc cag ttt gtg cga atc cac aag cca	3744

Ile Asp Asp Leu Glu Met Lys Phe Gln Phe Val Arg Ile His Lys Pro

1235

1240

1245

ccc ccg ctg acc cca ctt tat atg ggc tgt cgt tac act gtg tct ggg 3792

Pro Pro Leu Thr Pro Leu Tyr Met Gly Cys Arg Tyr Thr Val Ser Gly

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1260

tct ggt tca ggg atg ctg gaa ata ctc ccc aag gaa ctg gag ctc tgc 3840

Ser Gly Ser Gly Met Leu Glu Ile Leu Pro Lys Glu Leu Glu Leu Cys

1265

1270

1275

1280

tat cga agc cct gga gaa gac cag ctg ttc tcg gag ttc tac gtt ggc 3888

Tyr Arg Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu Phe Tyr Val Gly

1285

1290

1295

cac ttg gga tca ggg atc agg ctg caa gtg aaa gac aag aaa gat gag 3936

His Leu Gly Ser Gly Ile Arg Leu Gln Val Lys Asp Lys Lys Asp Glu

1300

1305

1310

act ctg gtg tgg gag gcc ttg gtg aaa cca gga gat ctc atg cct gca 3984

Thr Leu Val Trp Glu Ala Leu Val Lys Pro Gly Asp Leu Met Pro Ala

1315

1320

1325

act act ctg atc cct cca gcc cgc ata gcc gta cct tca cct ctg gat 4032

Thr Thr Leu Ile Pro Pro Ala Arg Ile Ala Val Pro Ser Pro Leu Asp

1330

1335

1340

gcc ccg cag ttg ctg cac ttt gtg gac cag tat cga gag cag ctg ata 4080

Ala Pro Gln Leu Leu His Phe Val Asp Gln Tyr Arg Glu Gln Leu Ile

1345	1350	1355	1360	
gcc cga gtg aca tcg gtg gag gtt gtc ttg gac aaa ctg cat gga cag				4128
Ala Arg Val Thr Ser Val Glu Val Val Leu Asp Lys Leu His Gly Gln				
	1365	1370	1375	
gtg ctg agc cag gag cag tac gag agg gtg ctg gct gag aac acg agg				4176
Val Leu Ser Gln Glu Gln Tyr Glu Arg Val Leu Ala Glu Asn Thr Arg				
	1380	1385	1390	
ccc agc cag atg cgg aag ctg ttc agc ttg agc cag tcc tgg gac cgg				4224
Pro Ser Gln Met Arg Lys Leu Phe Ser Leu Ser Gln Ser Trp Asp Arg				
	1395	1400	1405	
aag tgc aaa gat gga ctc tac caa gcc ctg aag gag acc cat cct cac				4272
Lys Cys Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu Thr His Pro His				
	1410	1415	1420	
ctc att atg gaa ctc tgg gag aag ggc agc aaa aag gga ctc ctg cca				4320
Leu Ile Met Glu Leu Trp Glu Lys Gly Ser Lys Lys Gly Leu Leu Pro				
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ctc agc agc tga				4332
Leu Ser Ser				

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His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr

35 40 45

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln

50 55 60

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg

65 70 75 80

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe

85 90 95

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr

100 105 110

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys

115 120 125

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser

130	135	140	
Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu			
145	150	155	160
Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala			
	165	170	175
Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro			
	180	185	190
Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu			
	195	200	205
Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg			
	210	215	220
Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr			
225	230	235	240
Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu			
	245	250	255
Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu			
	260	265	270
Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His			
	275	280	285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val

290

295

300

Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro

305

310

315

320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala

325

330

335

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly

340

345

350

Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser

355

360

365

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile

370

375

380

Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser

385

390

395

400

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly

405

410

415

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln

420

425

430

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile

435	440	445
Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln		
450	455	460
Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly		
465	470	475
		480
Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp		
485	490	495
Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu		
500	505	510
Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr		
515	520	525
Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser		
530	535	540
Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln		
545	550	555
		560
Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala		
565	570	575
Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg		
580	585	590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly

595

600

605

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu

610

615

620

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu

625

630

635

640

Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr

645

650

655

Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg

660

665

670

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn

675

680

685

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val

690

695

700

Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His

705

710

715

720

Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala

725

730

735

His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu

740	745	750
Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln		
755	760	765
Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val		
770	775	780
Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu		
785	790	795
		800
Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser		
805	810	815
Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu		
820	825	830
Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly		
835	840	845
Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn		
850	855	860
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala		
865	870	875
		880
Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu		
885	890	895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln

900

905

910

Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp

915

920

925

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu

930

935

940

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser

945

950

955

960

Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser

965

970

975

Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser

980

985

990

His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe

995

1000

1005

Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val

1010

1015

1020

Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr

1025

1030

1035

1040

Lys Pro Leu Gly Thr Asp Asp Asp Phe Trp Gly Pro Thr Gly Pro Val

1045	1050	1055	
Ala Thr Glu Val Val Asp Lys Glu Lys Asn Leu Tyr Arg Val His Phe			
1060	1065	1070	
Pro Val Ala Gly Ser Tyr Arg Trp Pro Asn Thr Gly Leu Cys Phe Val			
1075	1080	1085	
Met Arg Glu Ala Val Thr Val Glu Ile Glu Phe Cys Val Trp Asp Gln			
1090	1095	1100	
Phe Leu Gly Glu Ile Asn Pro Gln His Ser Trp Met Val Ala Gly Pro			
1105	1110	1115	1120
Leu Leu Asp Ile Lys Ala Glu Pro Gly Ala Val Glu Ala Val His Leu			
1125	1130	1135	
Pro His Phe Val Ala Leu Gln Gly Gly His Val Asp Thr Ser Leu Phe			
1140	1145	1150	
Gln Met Ala His Phe Lys Glu Glu Gly Met Leu Leu Glu Lys Pro Ala			
1155	1160	1165	
Arg Val Glu Leu His His Ile Val Leu Glu Asn Pro Ser Phe Ser Pro			
1170	1175	1180	
Leu Gly Val Leu Leu Lys Met Ile His Asn Ala Leu Arg Phe Ile Pro			
1185	1190	1195	1200

Val Thr Ser Val Val Leu Leu Tyr His Arg Val His Pro Glu Glu Val

1205

1210

1215

Thr Phe His Leu Tyr Leu Ile Pro Ser Asp Cys Ser Ile Arg Lys Ala

1220

1225

1230

Ile Asp Asp Leu Glu Met Lys Phe Gln Phe Val Arg Ile His Lys Pro

1235

1240

1245

Pro Pro Leu Thr Pro Leu Tyr Met Gly Cys Arg Tyr Thr Val Ser Gly

1250

1255

1260

Ser Gly Ser Gly Met Leu Glu Ile Leu Pro Lys Glu Leu Glu Leu Cys

1265

1270

1275

1280

Tyr Arg Ser Pro Gly Glu Asp Gln Leu Phe Ser Glu Phe Tyr Val Gly

1285

1290

1295

His Leu Gly Ser Gly Ile Arg Leu Gln Val Lys Asp Lys Lys Asp Glu

1300

1305

1310

Thr Leu Val Trp Glu Ala Leu Val Lys Pro Gly Asp Leu Met Pro Ala

1315

1320

1325

Thr Thr Leu Ile Pro Pro Ala Arg Ile Ala Val Pro Ser Pro Leu Asp

1330

1335

1340

Ala Pro Gln Leu Leu His Phe Val Asp Gln Tyr Arg Glu Gln Leu Ile

1345 1350 1355 1360

Ala Arg Val Thr Ser Val Glu Val Val Leu Asp Lys Leu His Gly Gln

1365 1370 1375

Val Leu Ser Gln Glu Gln Tyr Glu Arg Val Leu Ala Glu Asn Thr Arg

1380 1385 1390

Pro Ser Gln Met Arg Lys Leu Phe Ser Leu Ser Gln Ser Trp Asp Arg

1395 1400 1405

Lys Cys Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu Thr His Pro His

1410 1415 1420

Leu Ile Met Glu Leu Trp Glu Lys Gly Ser Lys Lys Gly Leu Leu Pro

1425 1430 1435 1440

Leu Ser Ser

<210> 7

<211> 1487

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(1296)

<400> 7

atg atg aga cag agg cag agc cat tat tgt tcc gtg ctg ttc ctg agt 48

Met Met Arg Gln Arg Gln Ser His Tyr Cys Ser Val Leu Phe Leu Ser

1

5

10

15

gtc aac tat ctg ggg ggg aca ttc cca gga gac att tgc tca gaa gag 96

Val Asn Tyr Leu Gly Gly Thr Phe Pro Gly Asp Ile Cys Ser Glu Glu

20

25

30

aat caa ata gtt tcc tct tat gct tct aaa gtc tgt ttt gag atc gaa 144

Asn Gln Ile Val Ser Ser Tyr Ala Ser Lys Val Cys Phe Glu Ile Glu

35

40

45

gaa gat tat aaa aat cgt cag ttt ctg ggg cct gaa gga aat gtg gat 192

Glu Asp Tyr Lys Asn Arg Gln Phe Leu Gly Pro Glu Gly Asn Val Asp

50

55

60

gtt gag ttg att gat aag agc aca aac aga tac agc gtt tgg ttc ccc 240

Val Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe Pro

65

70

75

80

act gct ggc tgg tat ctg tgg tca gcc aca ggc ctc ggc ttc ctg gta 288

Thr Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu Val

85

90

95

agg gat gag gtc aca gtg acg att gcg ttt ggt tcc tgg agt cag cac 336

Arg Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln His

100

105

110

ctg gcc ctg gac ctg cag cac cat gaa cag tgg ctg gtg ggc ggc ccc 384

Leu Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly Pro

115

120

125

ttg ttt gat gtc act gca gag cca gag gag gct gtc gcc gaa atc cac 432

Leu Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile His

130

135

140

ctc ccc cac ttc atc tcc ctc caa ggt gag gtg gac gtc tcc tgg ttt 480

Leu Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp Phe

145

150

155

160

ctc gtt gcc cat ttt aag aat gaa ggg atg gtc ctg gag cat cca gcc 528

Leu Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro Ala

165

170

175

cgg gtg gag cct ttc tat gct gtc ctg gaa agc ccc agc ttc tct ctg 576

Arg Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser Leu

180

185

190

atg ggc atc ctg ctg cgg atc gcc agt ggg act cgc ctc tcc atc ccc 624

Met Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile Pro

195

200

205

atc act tcc aac aca ttg atc tat tat cac ccc cac ccc gaa gat att 672

Ile Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp Ile

210

215

220

aag ttc cac ttg tac ctt gtc ccc agc gac gcc ttg cta aca aag gcg 720

Lys Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys Ala

225 230 235 240

ata gat gat gag gaa gat cgc ttc cat ggt gtg cgc ctg cag act tcg 768

Ile Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr Ser

245 250 255

ccc cca atg gaa ccc ctg aac ttt ggt tcc agt tat att gtg tct aat 816

Pro Pro Met Glu Pro Leu Asn Phe Gly Ser Ser Tyr Ile Val Ser Asn

260 265 270

tct gct aac ctg aaa gta atg ccc aag gag ttg aaa ttg tcc tac agg 864

Ser Ala Asn Leu Lys Val Met Pro Lys Glu Leu Lys Leu Ser Tyr Arg

275 280 285

agc cct gga gaa att cag cac ttc tca aaa ttc tat gct ggg cag atg 912

Ser Pro Gly Glu Ile Gln His Phe Ser Lys Phe Tyr Ala Gly Gln Met

290 295 300

aag gaa ccc att caa ctt gag att act gaa aaa aga cat ggg act ttg 960

Lys Glu Pro Ile Gln Leu Glu Ile Thr Glu Lys Arg His Gly Thr Leu

305 310 315 320

gtg tgg gat act gag gtg aag cca gtg gat ctc cag ctt gta gct gca 1008

Val Trp Asp Thr Glu Val Lys Pro Val Asp Leu Gln Leu Val Ala Ala

325 330 335

tca gcc cct cct cct ttc tca ggt gca gcc ttt gtg aag gag aac cac 1056
 Ser Ala Pro Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn His

340

345

350

cgg caa ctc caa gcc agg atg ggg gac ctg aaa ggg gtg ctc gat gat 1104
 Arg Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp Asp

355

360

365

ctc cag gac aat gag gtt ctt act gag aat gag aag gag ctg gtg gag 1152
 Leu Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val Glu

370

375

380

cag gaa aag aca cgg cag agc aag aat gag gcc ttg ctg agc atg gtg 1200
 Gln Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met Val

385

390

395

400

gag aag aaa ggg gac ctg gcc ctg gac gtg ctc ttc aga agc att agt 1248
 Glu Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile Ser

405

410

415

gaa agg gac cct tac ctc gtg tcc tat ctt aga cag cag aat ttg taa 1296
 Glu Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu

420

425

430

aatgagtcag ttaggtagtc tggaagagag aatccagcgt tctcattgga aatggataaa 1356

cagaaatgtg atcattgatt tcagtgttca agacagaaga agactgggta acatctatca 1416

cacaggcttt caggacagac ttgtaacctg gcatgtacct attgactgta tcctcatgca 1476

ttttcctcaa g

1487

<210> 8

<211> 431

<212> PRT

<213> Homo sapiens

<400> 8

Met Met Arg Gln Arg Gln Ser His Tyr Cys Ser Val Leu Phe Leu Ser

1

5

10

15

Val Asn Tyr Leu Gly Gly Thr Phe Pro Gly Asp Ile Cys Ser Glu Glu

20

25

30

Asn Gln Ile Val Ser Ser Tyr Ala Ser Lys Val Cys Phe Glu Ile Glu

35

40

45

Glu Asp Tyr Lys Asn Arg Gln Phe Leu Gly Pro Glu Gly Asn Val Asp

50

55

60

Val Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe Pro

65

70

75

80

Thr Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu Val

85

90

95

Arg Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln His
100 105 110

Leu Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly Pro
115 120 125

Leu Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile His
130 135 140

Leu Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp Phe
145 150 155 160

Leu Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro Ala
165 170 175

Arg Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser Leu
180 185 190

Met Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile Pro
195 200 205

Ile Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp Ile
210 215 220

Lys Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys Ala
225 230 235 240

Ile Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr Ser

	245		250		255										
Pro	Pro	Met	Glu	Pro	Leu	Asn	Phe	Gly	Ser	Ser	Tyr	Ile	Val	Ser	Asn
	260		265		270										
Ser	Ala	Asn	Leu	Lys	Val	Met	Pro	Lys	Glu	Leu	Lys	Leu	Ser	Tyr	Arg
	275		280		285										
Ser	Pro	Gly	Glu	Ile	Gln	His	Phe	Ser	Lys	Phe	Tyr	Ala	Gly	Gln	Met
	290		295		300										
Lys	Glu	Pro	Ile	Gln	Leu	Glu	Ile	Thr	Glu	Lys	Arg	His	Gly	Thr	Leu
305			310		315									320	
Val	Trp	Asp	Thr	Glu	Val	Lys	Pro	Val	Asp	Leu	Gln	Leu	Val	Ala	Ala
	325		330		335										
Ser	Ala	Pro	Pro	Pro	Phe	Ser	Gly	Ala	Ala	Phe	Val	Lys	Glu	Asn	His
	340		345		350										
Arg	Gln	Leu	Gln	Ala	Arg	Met	Gly	Asp	Leu	Lys	Gly	Val	Leu	Asp	Asp
	355		360		365										
Leu	Gln	Asp	Asn	Glu	Val	Leu	Thr	Glu	Asn	Glu	Lys	Glu	Leu	Val	Glu
	370		375		380										
Gln	Glu	Lys	Thr	Arg	Gln	Ser	Lys	Asn	Glu	Ala	Leu	Leu	Ser	Met	Val
385			390		395									400	

Glu Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile Ser
405 410 415

Glu Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu
420 425 430

<210> 9

<211> 4556

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(4365)

<220>

<223> Description of Artificial Sequence: Synthetic
Construct

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Met Ala Gly Gly Ala Trp Gly Arg Leu Ala Cys Tyr Leu Glu Phe Leu
1 5 10 15

aag aag gag gag ctg aag gag ttc cag ctt ctg ctc gcc aat aaa gcg 96
Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala
20 25 30

cac tcc agg agc tct tcg ggt gag aca ccc gct cag cca gag aag acg 144

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr

35

40

45

agt ggc atg gag gtg gcc tcg tac ctg gtg gct cag tat ggg gag cag 192

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln

50

55

60

cgg gcc tgg gac cta gcc ctc cat acc tgg gag cag atg ggg ctg agg 240

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg

65

70

75

80

tca ctg tgc gcc caa gcc cag gaa ggg gca ggc cac tct ccc tca ttc 288

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe

85

90

95

ccc tac agc cca agt gaa ccc cac ctg ggg tct ccc agc caa ccc acc 336

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr

100

105

110

tcc acc gca gtg cta atg ccc tgg atc cat gaa ttg ccg gcg ggg tgc 384

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys

115

120

125

acc cag ggc tca gag aga agg gtt ttg aga cag ctg cct gac aca tct 432

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser

130

135

140

gga cgc cgc tgg aga gaa atc tct gcc tca ctc ctc tac caa gct ctt 480
 Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu
 145 150 155 160

cca agc tcc cca gac cat gag tct cca agc cag gag tca ccc aac gcc 528
 Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala
 165 170 175

ccc aca tcc aca gca gtg ctg ggg agc tgg gga tcc cca cct cag ccc 576
 Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro
 180 185 190

agc cta gca ccc aga gag cag gag gct cct ggg acc caa tgg cct ctg 624
 Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu
 195 200 205

gat gaa acg tca gga att tac tac aca gaa atc aga gaa aga gag aga 672
 Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg
 210 215 220

gag aaa tca gag aaa ggc agg ccc cca tgg gca gcg gtg gta gga acg 720
 Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr
 225 230 235 240

ccc cca cag gcg cac acc agc cta cag ccc cac cac cac cca tgg gag 768
 Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu
 245 250 255

cct tct gtg aga gag agc ctc tgt tcc aca tgg ccc tgg aaa aat gag	816
Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu	
260 265 270	
gat ttt aac caa aaa ttc aca cag ctg cta ctt cta caa aga cct cac	864
Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His	
275 280 285	
ccc aga agc caa gat ccc ctg gtc aag aga agc tgg cct gat tat gtg	912
Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val	
290 295 300	
gag gag aat cga gga cat tta att gag atc aga gac tta ttt ggc cca	960
Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro	
305 310 315 320	
ggc ctg gat acc caa gaa cct cgc ata gtc ata ctg cag ggg gct gct	1008
Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala	
325 330 335	
gga att ggg aag tca aca ctg gcc agg cag gtg aag gaa gcc tgg ggg	1056
Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly	
340 345 350	
aga ggc cag ctg tat ggg gac cgc ttc cag cat gtc ttc tac ttc agc	1104
Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser	
355 360 365	
tgc aga gag ctg gcc cag tcc aag gtg gtg agt ctc gct gag ctc atc	1152

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile
370 375 380

gga aaa gat ggg aca gcc act ccg gct ccc att aga cag atc ctg tct 1200
Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser
385 390 395 400

agg cca gag cgg ctg ctc ttc atc ctc gat ggt gta gat gag cca gga 1248
Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly
405 410 415

tgg gtc ttg cag gag ccg agt tct gag ctc tgt ctg cac tgg agc cag 1296
Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln
420 425 430

cca cag ccg gcg gat gca ctg ctg ggc agt ttg ctg ggg aaa act ata 1344
Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile
435 440 445

ctt ccc gag gca tcc ttc ctg atc acg gct cgg acc aca gct ctg cag 1392
Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln
450 455 460

aac ctc att cct tct ttg gag cag gca cgt tgg gta gag gtc ctg ggg 1440
Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly
465 470 475 480

ttc tct gag tcc agc agg aag gaa tat ttc tac aga tat ttc aca gat 1488

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp	
485	490
495	
gaa agg caa gca att aga gcc ttt agg ttg gtc aaa tca aac aaa gag	1536
Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu	
500	505
510	
ctc tgg gcc ctg tgt ctt gtg ccc tgg gtg tcc tgg ctg gcc tgc act	1584
Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr	
515	520
525	
tgc ctg atg cag cag atg aag cgg aag gaa aaa ctc aca ctg act tcc	1632
Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser	
530	535
540	
aag acc acc aca acc ctc tgt cta cat tac ctt gcc cag gct ctc caa	1680
Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln	
545	550
555	560
gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct	1728
Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala	
565	570
575	
gag ggc atc tgg caa aaa aag acc ctt ttc agt cca gat gac ctc agg	1776
Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg	
580	585
590	
aag cat ggg tta gat ggg gcc atc atc tcc acc ttc ttg aag atg ggt	1824
Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly	

595	600	605	
att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc			1872
Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu			
610	615	620	
tgt ttc caa gag ttc ttt gca gca atg tcc tat gtc ttg gag gat gag			1920
Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu			
625	630	635	640
aag ggg aga ggt aaa cat tct aat tgc atc ata gat ttg gaa aag acg			1968
Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr			
	645	650	655
cta gaa gca tat gga ata cat ggc ctg ttt ggg gca tca acc aca cgt			2016
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg			
	660	665	670
ttc cta ttg ggc ctg tta agt gat gag ggg gag aga gag atg gag aac			2064
Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn			
	675	680	685
atc ttt cac tgc cgg ctg tct cag ggg agg aac ctg atg cag tgg gtc			2112
Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val			
	690	695	700
ccg tcc ctg cag ctg ctg ctg cag cca cac tct ctg gag tcc ctc cac			2160
Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His			

705	710	715	720	
tgc ttg tac gag act cgg aac aaa acg ttc ctg aca caa gtg atg gcc	2208			
Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala				
	725	730	735	
cat ttc gaa gaa atg ggc atg tgt gta gaa aca gac atg gag ctc tta	2256			
His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu				
	740	745	750	
gtg tgc act ttc tgc att aaa ttc agc cgc cac gtg aag aag ctt cag	2304			
Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln				
	755	760	765	
ctg att gag ggc agg cag cac aga tca aca tgg agc ccc acc atg gta	2352			
Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val				
	770	775	780	
gtc ctg ttc agg tgg gtc cca gtc aca gat gcc tat tgg cag att ctc	2400			
Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu				
785	790	795	800	
ttc tcc gtc ctc aag gtc acc aga aac ctg aag gag ctg gac cta agt	2448			
Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser				
	805	810	815	
gga aac tcg ctg agc cac tct gca gtg aag agt ctt tgt aag acc ctg	2496			
Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu				
	820	825	830	

aga cgc cct cgc tgc ctc ctg gag acc ctg cgg ttg gct ggc tgt ggc 2544

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly

835

840

845

ctc aca gct gag gac tgc aag gac ctt gcc ttt ggg ctg aga gcc aac 2592

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn

850

855

860

cag acc ctg acc gag ctg gac ctg agc ttc aat gtg ctc acg gat gct 2640

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala

865

870

875

880

gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta 2688

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu

885

890

895

cag cga ctg cag ctg gtc agc tgt ggc ctc acg tct gac tgc tgc cag 2736

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln

900

905

910

gac ctg gcc tct gtg ctt agt gcc agc ccc agc ctg aag gag cta gac 2784

Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp

915

920

925

ctg cag cag aac aac ctg gat gac gtt ggc gtg cga ctg ctc tgt gag 2832

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu

930

935

940

ggg ctc agg cat cct gcc tgc aaa ctc ata cgc ctg ggg ctg gac cag 2880

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln

945 950 955 960

aca act ctg agt gat gag atg agg cag gaa ctg agg gcc ctg gag cag 2928

Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln

965 970 975

gag aaa cct cag ctg ctc atc ttc agc aga cgg aaa cca agt gtg atg 2976

Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met

980 985 990

acc cct act gag ggc ctg gat acg gga gag atg agt aat agc aca tcc 3024

Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser Thr Ser

995 1000 1005

tca ctc aag cgg cag aga ctc gga tca gag agg gcg gct tcc cat gtt 3072

Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser His Val

1010 1015 1020

gct cag gct aat ctc aaa ctc ctg gac gtg agc aag atc ttc cca att 3120

Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe Pro Ile

1025 1030 1035 1040

gct gag att gca gag gaa agc tcc cca gag gta gta ccg gtg gaa ctc 3168

Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val Glu Leu

1045 1050 1055

ttg tgc gtg cct tct cct gcc tct caa ggg gac ctg cat acg aag cct 3216
 Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr Lys Pro

1060

1065

1070

ttg ggg act gac gat gac ttt ctg ggg cct gaa gga aat gtg gat gtt 3264
 Leu Gly Thr Asp Asp Asp Phe Leu Gly Pro Glu Gly Asn Val Asp Val

1075

1080

1085

gag ttg att gat aag agc aca aac aga tac agc gtt tgg ttc ccc act 3312
 Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe Pro Thr

1090

1095

1100

gct ggc tgg tat ctg tgg tca gcc aca ggc ctc ggc ttc ctg gta agg 3360
 Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu Val Arg

1105

1110

1115

1120

gat gag gtc aca gtg acg att gcg ttt ggt tcc tgg agt cag cac ctg 3408
 Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln His Leu

1125

1130

1135

gcc ctg gac ctg cag cac cat gaa cag tgg ctg gtg ggc ggc ccc ttg 3456
 Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly Pro Leu

1140

1145

1150

ttt gat gtc act gca gag cca gag gag gct gtc gcc gaa atc cac ctc 3504
 Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile His Leu

1155

1160

1165

ccc cac ttc atc tcc ctc caa ggt gag gtg gac gtc tcc tgg ttt ctc 3552
Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp Phe Leu
1170 1175 1180

gtt gcc cat ttt aag aat gaa ggg atg gtc ctg gag cat cca gcc cgg 3600
Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro Ala Arg
1185 1190 1195 1200

gtg gag cct ttc tat gct gtc ctg gaa agc ccc agc ttc tct ctg atg 3648
Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser Leu Met
1205 1210 1215

ggc atc ctg ctg cgg atc gcc agt ggg act cgc ctc tcc atc ccc atc 3696
Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile Pro Ile
1220 1225 1230

act tcc aac aca ttg atc tat tat cac ccc cac ccc gaa gat att aag 3744
Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp Ile Lys
1235 1240 1245

ttc cac ttg tac ctt gtc ccc agc gac gcc ttg cta aca aag gcg ata 3792
Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys Ala Ile
1250 1255 1260

gat gat gag gaa gat cgc ttc cat ggt gtg cgc ctg cag act tcg ccc 3840
Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr Ser Pro
1265 1270 1275 1280

cca atg gaa ccc ctg aac ttt ggt tcc agt tat att gtg tct aat tct 3888

Pro Met Glu Pro Leu Asn Phe Gly Ser Ser Tyr Ile Val Ser Asn Ser	
1285	1290 1295
gct aac ctg aaa gta atg ccc aag gag ttg aaa ttg tcc tac agg agc	3936
Ala Asn Leu Lys Val Met Pro Lys Glu Leu Lys Leu Ser Tyr Arg Ser	
1300	1305 1310
cct gga gaa att cag cac ttc tca aaa ttc tat gct ggg cag atg aag	3984
Pro Gly Glu Ile Gln His Phe Ser Lys Phe Tyr Ala Gly Gln Met Lys	
1315	1320 1325
gaa ccc att caa ctt gag att act gaa aaa aga cat ggg act ttg gtg	4032
Glu Pro Ile Gln Leu Glu Ile Thr Glu Lys Arg His Gly Thr Leu Val	
1330	1335 1340
tgg gat act gag gtg aag cca gtg gat ctc cag ctt gta gct gca tca	4080
Trp Asp Thr Glu Val Lys Pro Val Asp Leu Gln Leu Val Ala Ala Ser	
1345	1350 1355 1360
gcc cct cct cct ttc tca ggt gca gcc ttt gtg aag gag aac cac cgg	4128
Ala Pro Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn His Arg	
1365	1370 1375
caa ctc caa gcc agg atg ggg gac ctg aaa ggg gtg ctc gat gat ctc	4176
Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp Asp Leu	
1380	1385 1390
cag gac aat gag gtt ctt act gag aat gag aag gag ctg gtg gag cag	4224

Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val Glu Gln

1395

1400

1405

gaa aag aca cgg cag agc aag aat gag gcc ttg ctg agc atg gtg gag 4272

Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met Val Glu

1410

1415

1420

aag aaa ggg gac ctg gcc ctg gac gtg ctc ttc aga agc att agt gaa 4320

Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile Ser Glu

1425

1430

1435

1440

agg gac cct tac ctc gtg tcc tat ctt aga cag cag aat ttg taa 4365

Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu

1445

1450

aatgagtcag ttaggtagtc tggaagagag aatccagcgt tctcattgga aatggataaa 4425

cagaaatgtg atcattgatt tcagtgttca agacagaaga agactgggta acatctatca 4485

cacaggcttt caggacagac ttgtaacctg gcatgtacct attgactgta tcctcatgca 4545

tttttoctcaa g

4556

<210> 10

<211> 1454

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Construct

<400> 10

Met Ala Gly Gly Ala Trp Gly Arg Leu Ala Cys Tyr Leu Glu Phe Leu

1 5 10 15

Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala

20 25 30

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr

35 40 45

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln

50 55 60

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg

65 70 75 80

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe

85 90 95

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr

100 105 110

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys

115 120 125

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser

130 135 140

Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu
 145 150 155 160

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala
 165 170 175

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro
 180 185 190

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu
 195 200 205

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg
 210 215 220

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr
 225 230 235 240

Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu
 245 250 255

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu
 260 265 270

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His
 275 280 285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val

290	295	300	
Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro			
305	310	315	320
Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala			
	325	330	335
Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly			
	340	345	350
Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser			
	355	360	365
Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile			
	370	375	380
Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser			
385	390	395	400
Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly			
	405	410	415
Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln			
	420	425	430
Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile			
	435	440	445

Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln

450

455

460

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly

465

470

475

480

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp

485

490

495

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu

500

505

510

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr

515

520

525

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser

530

535

540

Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln

545

550

555

560

Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala

565

570

575

Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg

580

585

590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly

595	600	605
Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu		
610	615	620
Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu		
625	630	635
Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr		
645	650	655
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg		
660	665	670
Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn		
675	680	685
Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val		
690	695	700
Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His		
705	710	715
Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala		
725	730	735
His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu		
740	745	750

Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln

755

760

765

Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val

770

775

780

Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu

785

790

795

800

Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser

805

810

815

Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu

820

825

830

Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly

835

840

845

Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn

850

855

860

Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala

865

870

875

880

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu

885

890

895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln

900	905	910	
Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp			
915	920	925	
Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu			
930	935	940	
Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Leu Asp Gln			
945	950	955	960
Thr Thr Leu Ser Asp Glu Met Arg Gln Glu Leu Arg Ala Leu Glu Gln			
965	970	975	
Glu Lys Pro Gln Leu Leu Ile Phe Ser Arg Arg Lys Pro Ser Val Met			
980	985	990	
Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser Thr Ser			
995	1000	1005	
Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser His Val			
1010	1015	1020	
Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe Pro Ile			
1025	1030	1035	1040
Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val Glu Leu			
1045	1050	1055	

Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr Lys Pro

1060

1065

1070

Leu Gly Thr Asp Asp Asp Phe Leu Gly Pro Glu Gly Asn Val Asp Val

1075

1080

1085

Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe Pro Thr

1090

1095

1100

Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu Val Arg

1105

1110

1115

1120

Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln His Leu

1125

1130

1135

Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly Pro Leu

1140

1145

1150

Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile His Leu

1155

1160

1165

Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp Phe Leu

1170

1175

1180

Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro Ala Arg

1185

1190

1195

1200

Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser Leu Met

1205	1210	1215	
Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile Pro Ile			
1220	1225	1230	
Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp Ile Lys			
1235	1240	1245	
Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys Ala Ile			
1250	1255	1260	
Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr Ser Pro			
1265	1270	1275	1280
Pro Met Glu Pro Leu Asn Phe Gly Ser Ser Tyr Ile Val Ser Asn Ser			
1285	1290	1295	
Ala Asn Leu Lys Val Met Pro Lys Glu Leu Lys Leu Ser Tyr Arg Ser			
1300	1305	1310	
Pro Gly Glu Ile Gln His Phe Ser Lys Phe Tyr Ala Gly Gln Met Lys			
1315	1320	1325	
Glu Pro Ile Gln Leu Glu Ile Thr Glu Lys Arg His Gly Thr Leu Val			
1330	1335	1340	
Trp Asp Thr Glu Val Lys Pro Val Asp Leu Gln Leu Val Ala Ala Ser			
1345	1350	1355	1360

Ala Pro Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn His Arg

1365

1370

1375

Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp Asp Leu

1380

1385

1390

Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val Glu Gln

1395

1400

1405

Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met Val Glu

1410

1415

1420

Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile Ser Glu

1425

1430

1435

1440

Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu

1445

1450

<210> 11

<211> 4466

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(4272)

<220>

<223> Description of Artificial Sequence: Synthetic

Construct

<400> 11

atg gct ggc gga gcc tgg ggc cgc ctg gcc tgt tac ttg gag ttc ctg 48

Met Ala Gly Gly Ala Trp Gly Arg Leu Ala Cys Tyr Leu Glu Phe Leu

1

5

10

15

aag aag gag gag ctg aag gag ttc cag ctt ctg ctc gcc aat aaa gcg 96

Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala

20

25

30

cac tcc agg agc tct tcg ggt gag aca ccc gct cag cca gag aag acg 144

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr

35

40

45

agt ggc atg gag gtg gcc tcg tac ctg gtg gct cag tat ggg gag cag 192

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln

50

55

60

cgg gcc tgg gac cta gcc ctc cat acc tgg gag cag atg ggg ctg agg 240

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg

65

70

75

80

tca ctg tgc gcc caa gcc cag gaa ggg gca ggc cac tct ccc tca ttc 288

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe

85

90

95

ccc tac agc cca agt gaa ccc cac ctg ggg tct ccc agc caa ccc acc 336

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr

100

105

110

tcc acc gca gtg cta atg ccc tgg atc cat gaa ttg ccg gcg ggg tgc 384

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys

115

120

125

acc cag ggc tca gag aga agg gtt ttg aga cag ctg cct gac aca tct 432

Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser

130

135

140

gga cgc cgc tgg aga gaa atc tct gcc tca ctc ctc tac caa gct ctt 480

Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu

145

150

155

160

cca agc tcc cca gac cat gag tct cca agc cag gag tca ccc aac gcc 528

Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala

165

170

175

ccc aca tcc aca gca gtg ctg ggg agc tgg gga tcc cca cct cag ccc 576

Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro

180

185

190

agc cta gca ccc aga gag cag gag gct cct ggg acc caa tgg cct ctg 624

Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu

195

200

205

gat gaa acg tca gga att tac tac aca gaa atc aga gaa aga gag aga 672

Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg

210

215

220

gag aaa tca gag aaa ggc agg ccc cca tgg gca gcg gtg gta gga acg 720

Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr

225

230

235

240

ccc cca cag gcg cac acc agc cta cag ccc cac cac cac cca tgg gag 768

Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu

245

250

255

cct tct gtg aga gag agc ctc tgt tcc aca tgg ccc tgg aaa aat gag 816

Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu

260

265

270

gat ttt aac caa aaa ttc aca cag ctg cta ctt cta caa aga cct cac 864

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His

275

280

285

ccc aga agc caa gat ccc ctg gtc aag aga agc tgg cct gat tat gtg 912

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val

290

295

300

gag gag aat cga gga cat tta att gag atc aga gac tta ttt ggc cca 960

Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro

305

310

315

320

ggc ctg gat acc caa gaa cct cgc ata gtc ata ctg cag ggg gct gct	1008
Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala	
325 330 335	
gga att ggg aag tca aca ctg gcc agg cag gtg aag gaa gcc tgg ggg	1056
Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly	
340 345 350	
aga ggc cag ctg tat ggg gac cgc ttc cag cat gtc ttc tac ttc agc	1104
Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser	
355 360 365	
tgc aga gag ctg gcc cag tcc aag gtg gtg agt ctc gct gag ctc atc	1152
Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile	
370 375 380	
gga aaa gat ggg aca gcc act ccg gct ccc att aga cag atc ctg tct	1200
Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser	
385 390 395 400	
agg cca gag cgg ctg ctc ttc atc ctc gat ggt gta gat gag cca gga	1248
Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly	
405 410 415	
tgg gtc ttg cag gag ccg agt tct gag ctc tgt ctg cac tgg agc cag	1296
Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln	
420 425 430	
cca cag ccg gcg gat gca ctg ctg ggc agt ttg ctg ggg aaa act ata	1344

Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile

435

440

445

ctt ccc gag gca tcc ttc ctg atc acg gct cgg acc aca gct ctg cag 1392

Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln

450

455

460

aac ctc att cct tct ttg gag cag gca cgt tgg gta gag gtc ctg ggg 1440

Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly

465

470

475

480

ttc tct gag tcc agc agg aag gaa tat ttc tac aga tat ttc aca gat 1488

Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp

485

490

495

gaa agg caa gca att aga gcc ttt agg ttg gtc aaa tca aac aaa gag 1536

Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu

500

505

510

ctc tgg gcc ctg tgt ctt gtg ccc tgg gtg tcc tgg ctg gcc tgc act 1584

Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr

515

520

525

tgc ctg atg cag cag atg aag cgg aag gaa aaa ctc aca ctg act tcc 1632

Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser

530

535

540

aag acc acc aca acc ctc tgt cta cat tac ctt gcc cag gct ctc caa 1680

Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln	
545	550 555 560
gct cag cca ttg gga ccc cag ctc aga gac ctc tgc tct ctg gct gct	1728
Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala	
565	570 575
gag ggc atc tgg caa aaa aag acc ctt ttc agt cca gat gac ctc agg	1776
Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg	
580	585 590
aag cat ggg tta gat ggg gcc atc atc tcc acc ttc ttg aag atg ggt	1824
Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly	
595	600 605
att ctt caa gag cac ccc atc cct ctg agc tac agc ttc att cac ctc	1872
Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu	
610	615 620
tgt ttc caa gag ttc ttt gca gca atg tcc tat gtc ttg gag gat gag	1920
Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu	
625	630 635 640
aag ggg aga ggt aaa cat tct aat tgc atc ata gat ttg gaa aag acg	1968
Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr	
645	650 655
cta gaa gca tat gga ata cat ggc ctg ttt ggg gca tca acc aca cgt	2016
Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg	

660	665	670	
ttc cta ttg ggc ctg tta agt gat gag ggg gag aga gag atg gag aac			2064
Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn			
675	680	685	
atc ttt cac tgc cgg ctg tct cag ggg agg aac ctg atg cag tgg gtc			2112
Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val			
690	695	700	
cgc tcc ctg cag ctg ctg ctg cag cca cac tct ctg gag tcc ctc cac			2160
Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His			
705	710	715	720
tgc ttg tac gag act cgg aac aaa acg ttc ctg aca caa gtg atg gcc			2208
Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala			
725	730	735	
cat ttc gaa gaa atg ggc atg tgt gta gaa aca gac atg gag ctc tta			2256
His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu			
740	745	750	
gtg tgc act ttc tgc att aaa ttc agc cgc cac gtg aag aag ctt cag			2304
Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln			
755	760	765	
ctg att gag ggc agg cag cac aga tca aca tgg agc ccc acc atg gta			2352
Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val			

770	775	780	
gtc ctg ttc agg tgg gtc cca gtc aca gat gcc tat tgg cag att ctc			2400
Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu			
785	790	795	800
ttc tcc gtc ctc aag gtc acc aga aac ctg aag gag ctg gac cta agt			2448
Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser			
	805	810	815
gga aac tcg ctg agc cac tct gca gtg aag agt ctt tgt aag acc ctg			2496
Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu			
	820	825	830
aga cgc cct cgc tgc ctc ctg gag acc ctg cgg ttg gct ggc tgt ggc			2544
Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly			
	835	840	845
ctc aca gct gag gac tgc aag gac ctt gcc ttt ggg ctg aga gcc aac			2592
Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn			
	850	855	860
cag acc ctg acc gag ctg gac ctg agc ttc aat gtg ctc acg gat gct			2640
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala			
865	870	875	880
gga gcc aaa cac ctt tgc cag aga ctg aga cag ccg agc tgc aag cta			2688
Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu			
	885	890	895

cag cga ctg cag ctg gtc agc tgt ggc ctc acg tct gac tgc tgc cag 2736
 Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln

900

905

910

gac ctg gcc tct gtg ctt agt gcc agc ccc agc ctg aag gag cta gac 2784
 Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp

915

920

925

ctg cag cag aac aac ctg gat gac gtt ggc gtg cga ctg ctc tgt gag 2832
 Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu

930

935

940

ggg ctc agg cat cct gcc tgc aaa ctc ata cgc ctg ggg aaa cca agt 2880
 Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser

945

950

955

960

gtg atg acc cct act gag ggc ctg gat acg gga gag atg agt aat agc 2928
 Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser

965

970

975

aca tcc tca ctc aag cgg cag aga ctc gga tca gag agg gcg gct tcc 2976
 Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser

980

985

990

cat gtt gct cag gct aat ctc aaa ctc ctg gac gtg agc aag atc ttc 3024
 His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe

995

1000

1005

cca att gct gag att gca gag gaa agc tcc cca gag gta gta ccg gtg 3072

Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val

1010

1015

1020

gaa ctc ttg tgc gtg cct tct cct gcc tct caa ggg gac ctg cat acg 3120

Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr

1025

1030

1035

1040

aag cct ttg ggg act gac gat gac ttt ctg ggg cct gaa gga aat gtg 3168

Lys Pro Leu Gly Thr Asp Asp Asp Phe Leu Gly Pro Glu Gly Asn Val

1045

1050

1055

gat gtt gag ttg att gat aag agc aca aac aga tac agc gtt tgg ttc 3216

Asp Val Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe

1060

1065

1070

ccc act gct ggc tgg tat ctg tgg tca gcc aca ggc ctc ggc ttc ctg 3264

Pro Thr Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu

1075

1080

1085

gta agg gat gag gtc aca gtg acg att gcg ttt ggt tcc tgg agt cag 3312

Val Arg Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln

1090

1095

1100

cac ctg gcc ctg gac ctg cag cac cat gaa cag tgg ctg gtg ggc ggc 3360

His Leu Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly

1105

1110

1115

1120

ccc ttg ttt gat gtc act gca gag cca gag gag gct gtc gcc gaa atc 3408
 Pro Leu Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile

1125

1130

1135

cac ctc ccc cac ttc atc tcc ctc caa ggt gag gtg gac gtc tcc tgg 3456
 His Leu Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp

1140

1145

1150

ttt ctc gtt gcc cat ttt aag aat gaa ggg atg gtc ctg gag cat cca 3504
 Phe Leu Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro

1155

1160

1165

gcc cgg gtg gag cct ttc tat gct gtc ctg gaa agc ccc agc ttc tct 3552
 Ala Arg Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser

1170

1175

1180

ctg atg ggc atc ctg ctg cgg atc gcc agt ggg act cgc ctc tcc atc 3600
 Leu Met Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile

1185

1190

1195

1200

ccc atc act tcc aac aca ttg atc tat tat cac ccc cac ccc gaa gat 3648
 Pro Ile Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp

1205

1210

1215

att aag ttc cac ttg tac ctt gtc ccc agc gac gcc ttg cta aca aag 3696
 Ile Lys Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys

1220

1225

1230

gcg ata gat gat gag gaa gat cgc ttc cat ggt gtg cgc ctg cag act	3744
Ala Ile Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr	
1235 1240 1245	
tcg ccc cca atg gaa ccc ctg aac ttt ggt tcc agt tat att gtg tct	3792
Ser Pro Pro Met Glu Pro Leu Asn Phe Gly Ser Ser Tyr Ile Val Ser	
1250 1255 1260	
aat tct gct aac ctg aaa gta atg ccc aag gag ttg aaa ttg tcc tac	3840
Asn Ser Ala Asn Leu Lys Val Met Pro Lys Glu Leu Lys Leu Ser Tyr	
1265 1270 1275 1280	
agg agc cct gga gaa att cag cac ttc tca aaa ttc tat gct ggg cag	3888
Arg Ser Pro Gly Glu Ile Gln His Phe Ser Lys Phe Tyr Ala Gly Gln	
1285 1290 1295	
atg aag gaa ccc att caa ctt gag att act gaa aaa aga cat ggg act	3936
Met Lys Glu Pro Ile Gln Leu Glu Ile Thr Glu Lys Arg His Gly Thr	
1300 1305 1310	
ttg gtg tgg gat act gag gtg aag cca gtg gat ctc cag ctt gta gct	3984
Leu Val Trp Asp Thr Glu Val Lys Pro Val Asp Leu Gln Leu Val Ala	
1315 1320 1325	
gca tca gcc cct cct cct ttc tca ggt gca gcc ttt gtg aag gag aac	4032
Ala Ser Ala Pro Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn	
1330 1335 1340	
cac cgg caa ctc caa gcc agg atg ggg gac ctg aaa ggg gtg ctc gat	4080

His Arg Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp

1345

1350

1355

1360

gat ctc cag gac aat gag gtt ctt act gag aat gag aag gag ctg gtg 4128

Asp Leu Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val

1365

1370

1375

gag cag gaa aag aca cgg cag agc aag aat gag gcc ttg ctg agc atg 4176

Glu Gln Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met

1380

1385

1390

gtg gag aag aaa ggg gac ctg gcc ctg gac gtg ctc ttc aga agc att 4224

Val Glu Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile

1395

1400

1405

agt gaa agg gac cct tac ctc gtg tcc tat ctt aga cag cag aat ttg 4272

Ser Glu Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu

1410

1415

1420

taaaatgagt cagttaggta gtctggaaga gagaatccag cgttctcatt ggaaatggat 4332

aaacagaaat gtgatcattg atttcagtgt tcaagacaga agaagactgg gtaacatcta 4392

tcacacaggc ttccaggaca gacttgtaac ctggcatgta cctattgact gtatcctcat 4452

gcattttcct caag

4466

<210> 12

<211> 1424

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Construct

<400> 12

Met Ala Gly Gly Ala Trp Gly Arg Leu Ala Cys Tyr Leu Glu Phe Leu

1 5 10 15

Lys Lys Glu Glu Leu Lys Glu Phe Gln Leu Leu Leu Ala Asn Lys Ala

20 25 30

His Ser Arg Ser Ser Ser Gly Glu Thr Pro Ala Gln Pro Glu Lys Thr

35 40 45

Ser Gly Met Glu Val Ala Ser Tyr Leu Val Ala Gln Tyr Gly Glu Gln

50 55 60

Arg Ala Trp Asp Leu Ala Leu His Thr Trp Glu Gln Met Gly Leu Arg

65 70 75 80

Ser Leu Cys Ala Gln Ala Gln Glu Gly Ala Gly His Ser Pro Ser Phe

85 90 95

Pro Tyr Ser Pro Ser Glu Pro His Leu Gly Ser Pro Ser Gln Pro Thr

100 105 110

Ser Thr Ala Val Leu Met Pro Trp Ile His Glu Leu Pro Ala Gly Cys

115	120	125	
Thr Gln Gly Ser Glu Arg Arg Val Leu Arg Gln Leu Pro Asp Thr Ser			
130	135	140	
Gly Arg Arg Trp Arg Glu Ile Ser Ala Ser Leu Leu Tyr Gln Ala Leu			
145	150	155	160
Pro Ser Ser Pro Asp His Glu Ser Pro Ser Gln Glu Ser Pro Asn Ala			
165	170	175	
Pro Thr Ser Thr Ala Val Leu Gly Ser Trp Gly Ser Pro Pro Gln Pro			
180	185	190	
Ser Leu Ala Pro Arg Glu Gln Glu Ala Pro Gly Thr Gln Trp Pro Leu			
195	200	205	
Asp Glu Thr Ser Gly Ile Tyr Tyr Thr Glu Ile Arg Glu Arg Glu Arg			
210	215	220	
Glu Lys Ser Glu Lys Gly Arg Pro Pro Trp Ala Ala Val Val Gly Thr			
225	230	235	240
Pro Pro Gln Ala His Thr Ser Leu Gln Pro His His His Pro Trp Glu			
245	250	255	
Pro Ser Val Arg Glu Ser Leu Cys Ser Thr Trp Pro Trp Lys Asn Glu			
260	265	270	

Asp Phe Asn Gln Lys Phe Thr Gln Leu Leu Leu Leu Gln Arg Pro His

275

280

285

Pro Arg Ser Gln Asp Pro Leu Val Lys Arg Ser Trp Pro Asp Tyr Val

290

295

300

Glu Glu Asn Arg Gly His Leu Ile Glu Ile Arg Asp Leu Phe Gly Pro

305

310

315

320

Gly Leu Asp Thr Gln Glu Pro Arg Ile Val Ile Leu Gln Gly Ala Ala

325

330

335

Gly Ile Gly Lys Ser Thr Leu Ala Arg Gln Val Lys Glu Ala Trp Gly

340

345

350

Arg Gly Gln Leu Tyr Gly Asp Arg Phe Gln His Val Phe Tyr Phe Ser

355

360

365

Cys Arg Glu Leu Ala Gln Ser Lys Val Val Ser Leu Ala Glu Leu Ile

370

375

380

Gly Lys Asp Gly Thr Ala Thr Pro Ala Pro Ile Arg Gln Ile Leu Ser

385

390

395

400

Arg Pro Glu Arg Leu Leu Phe Ile Leu Asp Gly Val Asp Glu Pro Gly

405

410

415

Trp Val Leu Gln Glu Pro Ser Ser Glu Leu Cys Leu His Trp Ser Gln

420	425	430	
Pro Gln Pro Ala Asp Ala Leu Leu Gly Ser Leu Leu Gly Lys Thr Ile			
435	440	445	
Leu Pro Glu Ala Ser Phe Leu Ile Thr Ala Arg Thr Thr Ala Leu Gln			
450	455	460	
Asn Leu Ile Pro Ser Leu Glu Gln Ala Arg Trp Val Glu Val Leu Gly			
465	470	475	480
Phe Ser Glu Ser Ser Arg Lys Glu Tyr Phe Tyr Arg Tyr Phe Thr Asp			
485	490	495	
Glu Arg Gln Ala Ile Arg Ala Phe Arg Leu Val Lys Ser Asn Lys Glu			
500	505	510	
Leu Trp Ala Leu Cys Leu Val Pro Trp Val Ser Trp Leu Ala Cys Thr			
515	520	525	
Cys Leu Met Gln Gln Met Lys Arg Lys Glu Lys Leu Thr Leu Thr Ser			
530	535	540	
Lys Thr Thr Thr Thr Leu Cys Leu His Tyr Leu Ala Gln Ala Leu Gln			
545	550	555	560
Ala Gln Pro Leu Gly Pro Gln Leu Arg Asp Leu Cys Ser Leu Ala Ala			
565	570	575	

Glu Gly Ile Trp Gln Lys Lys Thr Leu Phe Ser Pro Asp Asp Leu Arg

580

585

590

Lys His Gly Leu Asp Gly Ala Ile Ile Ser Thr Phe Leu Lys Met Gly

595

600

605

Ile Leu Gln Glu His Pro Ile Pro Leu Ser Tyr Ser Phe Ile His Leu

610

615

620

Cys Phe Gln Glu Phe Phe Ala Ala Met Ser Tyr Val Leu Glu Asp Glu

625

630

635

640

Lys Gly Arg Gly Lys His Ser Asn Cys Ile Ile Asp Leu Glu Lys Thr

645

650

655

Leu Glu Ala Tyr Gly Ile His Gly Leu Phe Gly Ala Ser Thr Thr Arg

660

665

670

Phe Leu Leu Gly Leu Leu Ser Asp Glu Gly Glu Arg Glu Met Glu Asn

675

680

685

Ile Phe His Cys Arg Leu Ser Gln Gly Arg Asn Leu Met Gln Trp Val

690

695

700

Pro Ser Leu Gln Leu Leu Leu Gln Pro His Ser Leu Glu Ser Leu His

705

710

715

720

Cys Leu Tyr Glu Thr Arg Asn Lys Thr Phe Leu Thr Gln Val Met Ala

725	730	735
His Phe Glu Glu Met Gly Met Cys Val Glu Thr Asp Met Glu Leu Leu		
740	745	750
Val Cys Thr Phe Cys Ile Lys Phe Ser Arg His Val Lys Lys Leu Gln		
755	760	765
Leu Ile Glu Gly Arg Gln His Arg Ser Thr Trp Ser Pro Thr Met Val		
770	775	780
Val Leu Phe Arg Trp Val Pro Val Thr Asp Ala Tyr Trp Gln Ile Leu		
785	790	795
		800
Phe Ser Val Leu Lys Val Thr Arg Asn Leu Lys Glu Leu Asp Leu Ser		
805	810	815
Gly Asn Ser Leu Ser His Ser Ala Val Lys Ser Leu Cys Lys Thr Leu		
820	825	830
Arg Arg Pro Arg Cys Leu Leu Glu Thr Leu Arg Leu Ala Gly Cys Gly		
835	840	845
Leu Thr Ala Glu Asp Cys Lys Asp Leu Ala Phe Gly Leu Arg Ala Asn		
850	855	860
Gln Thr Leu Thr Glu Leu Asp Leu Ser Phe Asn Val Leu Thr Asp Ala		
865	870	875
		880

Gly Ala Lys His Leu Cys Gln Arg Leu Arg Gln Pro Ser Cys Lys Leu

885

890

895

Gln Arg Leu Gln Leu Val Ser Cys Gly Leu Thr Ser Asp Cys Cys Gln

900

905

910

Asp Leu Ala Ser Val Leu Ser Ala Ser Pro Ser Leu Lys Glu Leu Asp

915

920

925

Leu Gln Gln Asn Asn Leu Asp Asp Val Gly Val Arg Leu Leu Cys Glu

930

935

940

Gly Leu Arg His Pro Ala Cys Lys Leu Ile Arg Leu Gly Lys Pro Ser

945

950

955

960

Val Met Thr Pro Thr Glu Gly Leu Asp Thr Gly Glu Met Ser Asn Ser

965

970

975

Thr Ser Ser Leu Lys Arg Gln Arg Leu Gly Ser Glu Arg Ala Ala Ser

980

985

990

His Val Ala Gln Ala Asn Leu Lys Leu Leu Asp Val Ser Lys Ile Phe

995

1000

1005

Pro Ile Ala Glu Ile Ala Glu Glu Ser Ser Pro Glu Val Val Pro Val

1010

1015

1020

Glu Leu Leu Cys Val Pro Ser Pro Ala Ser Gln Gly Asp Leu His Thr

1025 1030 1035 1040

Lys Pro Leu Gly Thr Asp Asp Asp Phe Leu Gly Pro Glu Gly Asn Val

1045 1050 1055

Asp Val Glu Leu Ile Asp Lys Ser Thr Asn Arg Tyr Ser Val Trp Phe

1060 1065 1070

Pro Thr Ala Gly Trp Tyr Leu Trp Ser Ala Thr Gly Leu Gly Phe Leu

1075 1080 1085

Val Arg Asp Glu Val Thr Val Thr Ile Ala Phe Gly Ser Trp Ser Gln

1090 1095 1100

His Leu Ala Leu Asp Leu Gln His His Glu Gln Trp Leu Val Gly Gly

1105 1110 1115 1120

Pro Leu Phe Asp Val Thr Ala Glu Pro Glu Glu Ala Val Ala Glu Ile

1125 1130 1135

His Leu Pro His Phe Ile Ser Leu Gln Gly Glu Val Asp Val Ser Trp

1140 1145 1150

Phe Leu Val Ala His Phe Lys Asn Glu Gly Met Val Leu Glu His Pro

1155 1160 1165

Ala Arg Val Glu Pro Phe Tyr Ala Val Leu Glu Ser Pro Ser Phe Ser

1170 1175 1180

Leu Met Gly Ile Leu Leu Arg Ile Ala Ser Gly Thr Arg Leu Ser Ile
1185 1190 1195 1200

Pro Ile Thr Ser Asn Thr Leu Ile Tyr Tyr His Pro His Pro Glu Asp
1205 1210 1215

Ile Lys Phe His Leu Tyr Leu Val Pro Ser Asp Ala Leu Leu Thr Lys
1220 1225 1230

Ala Ile Asp Asp Glu Glu Asp Arg Phe His Gly Val Arg Leu Gln Thr
1235 1240 1245

Ser Pro Pro Met Glu Pro Leu Asn Phe Gly Ser Ser Tyr Ile Val Ser
1250 1255 1260

Asn Ser Ala Asn Leu Lys Val Met Pro Lys Glu Leu Lys Leu Ser Tyr
1265 1270 1275 1280

Arg Ser Pro Gly Glu Ile Gln His Phe Ser Lys Phe Tyr Ala Gly Gln
1285 1290 1295

Met Lys Glu Pro Ile Gln Leu Glu Ile Thr Glu Lys Arg His Gly Thr
1300 1305 1310

Leu Val Trp Asp Thr Glu Val Lys Pro Val Asp Leu Gln Leu Val Ala
1315 1320 1325

Ala Ser Ala Pro Pro Pro Phe Ser Gly Ala Ala Phe Val Lys Glu Asn

1330	1335	1340	
His Arg Gln Leu Gln Ala Arg Met Gly Asp Leu Lys Gly Val Leu Asp			
1345	1350	1355	1360
Asp Leu Gln Asp Asn Glu Val Leu Thr Glu Asn Glu Lys Glu Leu Val			
	1365	1370	1375
Glu Gln Glu Lys Thr Arg Gln Ser Lys Asn Glu Ala Leu Leu Ser Met			
	1380	1385	1390
Val Glu Lys Lys Gly Asp Leu Ala Leu Asp Val Leu Phe Arg Ser Ile			
	1395	1400	1405
Ser Glu Arg Asp Pro Tyr Leu Val Ser Tyr Leu Arg Gln Gln Asn Leu			
	1410	1415	1420

<210> 13

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 13

ccgaattcac catggctggc ggagcctggg gc

32

<210> 14

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 14

ccgctcgagt caacagaggg ttgtggtggt cttg

34

<210> 15

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 15

cccgaattcg aacctcgcat agtcatactg c

31

<210> 16

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 16

gtcccacaac agaattcaat ctcaacggtc

30

<210> 17

<211> 21

<212> DNA

<213> Homo sapiens

<400> 17

tgtgatgaga gaagcgggtga c

21

<210> 18

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 18

ccgctcgagc aaagaagggt cagccaaagc

30

<210> 19

<211> 209

<212> PRT

<213> Homo sapiens

<400> 19

Ile Val Ile Leu Gln Gly Ala Ala Gly Ile Gly Lys Ser Ile Leu Ala

1 5 10 15

Arg Gln Val Lys Glu Ala Trp Gly Arg Gly Gln Leu Tyr Gly Asp Arg

20 25 30

Phe Gln His Val Phe Tyr Phe Ser Cys Arg Glu Leu Ala Gln Ser Lys

35 40 45

Val Val Ser Leu Ala Glu Leu Ile Gly Lys Asp Gly Thr Ala Thr Pro

50 55 60

Ala Pro Ile Arg Gln Ile Leu Ser Arg Pro Glu Arg Leu Leu Phe Ile

65 70 75 80

Leu Asp Gly Val Asp Glu Pro Gly Trp Val Leu Gln Glu Pro Ser Ser

85 90 95

Glu Leu Cys Leu His Trp Ser Gln Pro Gln Pro Ala Asp Ala Leu Leu

100 105 110

Gly Ser Leu Leu Gly Lys Thr Ile Leu Pro Glu Ala Ser Phe Leu Ile

115

120

125

Thr Ala Arg Thr Thr Ala Leu Gln Asn Leu Ile Pro Ser Leu Glu Gln

130

135

140

Ala Arg Trp Val Glu Val Leu Gly Phe Ser Glu Ser Ser Arg Lys Glu

145

150

155

160

Tyr Phe Tyr Arg Tyr Phe Thr Asp Glu Arg Gln Ala Ile Arg Ala Phe

165

170

175

Arg Leu Val Lys Ser Asn Lys Glu Leu Trp Ala Leu Cys Leu Val Pro

180

185

190

Trp Val Ser Trp Leu Ala Cys Thr Cys Leu Met Gln Gln Met Lys Arg

195

200

205

Lys

<210> 20

<211> 212

<212> PRT

<213> Homo sapiens

<400> 20

Thr Ile Phe Ile Leu Gly Asp Ala Gly Val Gly Lys Ser Met Leu Leu

1 5 10 15

Gln Arg Leu Gln Ser Leu Trp Ala Thr Gly Arg Leu Asp Ala Gly Val

20 25 30

Lys Phe Phe Phe His Phe Arg Cys Arg Met Phe Ser Cys Phe Lys Glu

35 40 45

Ser Asp Arg Leu Cys Leu Gln Asp Leu Leu Phe Lys His Tyr Cys Tyr

50 55 60

Pro Glu Arg Asp Pro Glu Glu Val Phe Ala Phe Leu Leu Arg Phe Pro

65 70 75 80

His Val Ala Leu Phe Thr Phe Asp Gly Leu Asp Glu Leu His Ser Asp

85 90 95

Leu Asp Leu Ser Arg Val Pro Asp Ser Ser Cys Pro Trp Glu Pro Ala

100 105 110

His Pro Leu Val Leu Leu Ala Asn Leu Leu Ser Gly Lys Leu Leu Lys

115 120 125

Gly Ala Ser Lys Leu Leu Thr Ala Arg Thr Gly Ile Glu Val Pro Arg

130 135 140

Gln Phe Leu Arg Lys Lys Val Leu Leu Arg Gly Phe Ser Pro Ser His

145 150 155 160

Leu Arg Ala Tyr Ala Arg Arg Met Phe Pro Glu Arg Ala Leu Gln Asp

165

170

175

Arg Leu Leu Ser Gln Leu Glu Ala Asn Pro Asn Leu Cys Ser Leu Cys

180

185

190

Ser Val Pro Leu Phe Cys Trp Ile Ile Phe Arg Cys Phe Gln His Phe

195

200

205

Arg Ala Ala Phe

210

<210> 21

<211> 219

<212> PRT

<213> Homo sapiens

<400> 21

Trp Val Thr Ile His Gly Met Ala Gly Cys Gly Lys Ser Val Leu Ala

1

5

10

15

Ala Glu Ala Val Arg Asp His Ser Leu Leu Glu Gly Cys Phe Pro Gly

20

25

30

Gly Val His Trp Val Ser Val Gly Lys Gln Asp Lys Ser Gly Leu Leu

35

40

45

Met Lys Leu Gln Asn Leu Cys Thr Arg Leu Asp Gln Asp Glu Ser Phe

50

55

60

Ser Gln Arg Leu Pro Leu Asn Ile Glu Glu Ala Lys Asp Arg Leu Arg

65

70

75

80

Ile Leu Met Leu Arg Lys His Pro Arg Ser Leu Leu Ile Leu Asp Asp

85

90

95

Val Trp Asp Ser Trp Val Leu Lys Ala Phe Asp Ser Gln Cys Gln Ile

100

105

110

Leu Leu Thr Thr Arg Asp Lys Ser Val Thr Asp Ser Val Met Gly Pro

115

120

125

Lys Tyr Val Val Pro Val Glu Ser Ser Leu Gly Lys Glu Lys Gly Leu

130

135

140

Glu Ile Leu Ser Leu Phe Val Asn Met Lys Lys Ala Asp Leu Pro Glu

145

150

155

160

Gln Ala His Ser Ile Ile Lys Glu Cys Lys Gly Ser Pro Leu Val Val

165

170

175

Ser Leu Ile Gly Ala Leu Leu Arg Asp Phe Pro Asn Arg Trp Glu Tyr

180

185

190

Tyr Leu Lys Gln Leu Gln Asn Lys Gln Phe Lys Arg Ile Arg Lys Ser

195

200

205

Ser Ser Tyr Asp Tyr Glu Ala Leu Asp Glu Ala

210

215

<210> 22

<211> 221

<212> PRT

<213> *Caenorhabditis elegans*

<400> 22

Phe Leu Phe Leu His Gly Arg Ala Gly Ser Gly Lys Ser Val Ile Ala

1

5

10

15

Ser Gln Ala Leu Ser Lys Ser Asp Gln Leu Ile Gly Ile Asn Tyr Asp

20

25

30

Ser Ile Val Trp Leu Lys Asp Ser Gly Thr Ala Pro Lys Ser Thr Phe

35

40

45

Asp Leu Phe Thr Asp Ile Leu Leu Met Leu Lys Ser Glu Asp Asp Leu

50

55

60

Leu Asn Phe Pro Ser Val Glu His Val Thr Ser Val Val Leu Lys Arg

65

70

75

80

Met Ile Cys Asn Ala Leu Ile Asp Arg Pro Asn Thr Leu Phe Val Phe

	85	90	95
Asp Gln Val Val Gln Glu Glu Thr Ile Arg Trp Ala Gln Glu Leu Arg			
	100	105	110
Leu Arg Cys Leu Val Thr Thr Arg Asp Val Glu Ile Ser Asn Ala Ala			
	115	120	125
Ser Gln Thr Cys Glu Phe Ile Glu Val Thr Ser Leu Glu Ile Asp Glu			
	130	135	140
Cys Tyr Asp Phe Leu Glu Ala Tyr Gly Met Pro Met Pro Val Gly Glu			
145	150	155	160
Lys Glu Glu Asp Val Leu Asn Lys Thr Ile Glu Leu Ser Ser Gly Asn			
	165	170	175
Pro Ala Thr Leu Met Met Phe Phe Lys Ser Cys Glu Pro Lys Thr Phe			
	180	185	190
Glu Lys Met Ala Gln Leu Asn Asn Lys Leu Glu Ser Arg Gly Leu Asx			
	195	200	205
Gly Asx Glu Cys Ile Thr Pro Tyr Ser Tyr Lys Ser Leu			
	210	215	220

<210> 23

<211> 91

<212> PRT

<213> Homo sapiens

<400> 23 .

Leu Asp Ala Pro Gln Leu Leu His Phe Val Asp Gln Tyr Arg Glu Gln

1 5 10 15

Leu Ile Ala Arg Val Thr Ser Val Glu Val Val Leu Asp Lys Leu His

20 25 30

Gly Gln Val Leu Ser Gln Glu Gln Tyr Glu Arg Val Leu Ala Glu Asn

35 40 45

Thr Arg Pro Ser Gln Met Arg Lys Leu Phe Ser Leu Ser Gln Ser Trp

50 55 60

Asp Arg Lys Cys Lys Asp Gly Leu Tyr Gln Ala Leu Lys Glu Thr His

65 70 75 80

Leu Ile Met Glu Leu Trp Glu Lys Gly Ser Lys

85 90

<210> 24

<211> 91

<212> PRT

<213> Homo sapiens

<400> 24

Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu

1

5

10

15

Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp

20

25

30

Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr

35

40

45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp

50

55

60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr

65

70

75

80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile

85

90

<210> 25

<211> 90

<212> PRT

<213> *Caenorhabditis elegans*

<400> 25

Glu Ser His Pro His Ile Gln Leu Leu Lys Ser Asn Arg Glu Leu Leu

1

5

10

15

Val Thr His Ile Arg Asn Thr Gln Cys Leu Val Asp Asn Leu Leu Lys
20 25 30

Asn Asp Tyr Phe Ser Ala Glu Asp Ala Glu Ile Val Cys Ala Cys Pro
35 40 45

Thr Gln Pro Asp Lys Tyr Arg Lys Ile Leu Asp Leu Val Gln Ser Lys
50 55 60

Gly Glu Glu Val Ser Glu Phe Phe Leu Tyr Leu Leu Gln Gln Leu Ala
65 70 75 80

Asp Ala Tyr Val Asp Leu Arg Pro Trp Leu
85 90

<210> 26

<211> 88

<212> PRT

<213> *Caenorhabditis elegans*

<400> 26

Leu Cys Glu Ile Glu Cys Arg Ala Leu Ser Thr His Thr Arg Leu Ile
1 5 10 15

His Asp Phe Glu Pro Arg Asp Ala Leu Thr Tyr Leu Glu Gly Lys Asn
20 25 30

Ile Phe Thr Glu His Ser Glu Leu Ile Ser Lys Met Ser Thr Arg Leu

35

40

45

Glu Arg Ile Ala Asn Phe Leu Arg Ile Tyr Arg Arg Gln Ala Ser Glu

50

55

60

Leu Gly Pro Leu Ile Asp Phe Phe Asn Tyr Asn Asn Gln Ser His Leu

65

70

75

80

Ala Asp Phe Leu Glu Gln Tyr Ile

85

<210> 27

<211> 91

<212> PRT

<213> *Caenorhabditis elegans*

<400> 27

Met Arg Gln Asp Arg Arg Ser Leu Leu Glu Arg Asn Ile Met Met Phe

1

5

10

15

Ser Ser His Leu Lys Val Asp Glu Ile Leu Glu Val Leu Ile Ala Lys

20

25

30

Gln Val Leu Asn Ser Asp Asn Gly Asp Met Ile Asn Ser Cys Gly Thr

35

40

45

Val Arg Glu Lys Arg Arg Glu Ile Val Lys Ala Val Gln Arg Arg Gly

50

55

60

Asp Val Ala Phe Asp Ala Phe Tyr Asp Ala Leu Arg Ser Thr Gly His

65

70

75

80

Glu Gly Leu Ala Glu Val Leu Glu Pro Leu Ala

85

90

<210> 28

<211> 95

<212> PRT

<213> Homo sapiens

<400> 28

Met Glu Ala Arg Asp Lys Gln Val Leu Arg Ser Leu Arg Leu Glu Leu

1

5

10

15

Gly Ala Glu Val Leu Val Glu Gly Leu Val Leu Gln Tyr Leu Gln Tyr

20

25

30

Gln Glu Gly Ile Leu Thr Glu Asn His Ile Gln Glu Ile Asn Ala Gln

35

40

45

Thr Thr Gly Leu Arg Lys Thr Met Leu Leu Leu Asp Ile Leu Pro Ser

50

55

60

Arg Gly Pro Lys Ala Phe Asp Ile Phe Leu Asp Ser Leu Gln Glu Phe

65 70 75 80

Pro Trp Val Arg Glu Lys Leu Lys Lys Ala Arg Glu Glu Ala Met

85 90 95

<210> 29

<211> 91

<212> PRT

<213> Homo sapiens

<400> 29

Met His Pro His His Gln Glu Thr Leu Lys Lys Asn Arg Val Val Leu

1 5 10 15

Ala Lys Gln Leu Leu Leu Ser Glu Leu Leu Glu His Leu Leu Glu Lys

20 25 30

Gln Ile Ile Thr Leu Glu Met Arg Glu Leu Ile Gln Ala Lys Val Gly

35 40 45

Ser Phe Ser Gln Asn Val Glu Leu Leu Asn Leu Leu Pro Lys Arg Gly

50 55 60

Pro Gln Ala Phe Asp Ala Phe Cys Glu Ala Leu Arg Glu Thr Lys Gln

65 70 75 80

Gly His Leu Arg Asp Met Leu Leu Thr Thr Leu

85 90

<210> 30

<211> 93

<212> PRT

<213> Homo sapiens

<400> 30

Met Asp Glu Ala Asp Arg Arg Leu Leu Arg Arg Cys Arg Leu Arg Leu

1

5

10

15

Val Glu Glu Leu Gln Val Gln Gln Leu Trp Asp Val Leu Leu Ser Arg

20

25

30

Glu Leu Phe Arg Pro His Met Ile Glu Asp Ile Gln Arg Ala Gly Ser

35

40

45

Gly Ser Arg Arg Asp Gln Ala Arg Gln Leu Asp Ile Asp Leu Glu Thr

50

55

60

Arg Gly Ser Gln Ala Leu Pro Leu Phe Ile Ser Cys Leu Glu Asp Thr

65

70

75

80

Gly Gln Asp Met Leu Ala Ser Phe Leu Arg Thr Asn Arg

85

90